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# Synopsis of the ant genus *Myrmecina* Curtis, 1829 from China (Hymenoptera, Formicidae, Myrmicinae), with description of eleven new species

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## Abstract

The ant genus *Myrmecina* Curtis, 1829 is a morphologically diverse group with a distribution spanning the Holarctic, Southeast Asia, and northeastern Australia, and comprising 106 described species worldwide. China represents a biodiversity hotspot for this genus, yet only 17 species were previously recognized. Here, we present a comprehensive morphological analysis of Chinese specimens, recognizing 28 valid species, including 11 new to science: *Myrmecina carinolateralis* Gu & Chen, **sp. nov.**, *M. flavipeda* Gu & Chen, **sp. nov.**, *M. globicephala* Gu & Chen, **sp. nov.**, *M. hirsuta* Gu & Chen, **sp. nov.**, *M. jiachengi* Gu & Chen, **sp. nov.**, *M. laevidorsa* Gu & Chen, **sp. nov.**, *M. planiclypea* Gu & Chen, **sp. nov.**, *M. rugosodorsum* Gu & Chen, **sp. nov.**, *M. shanyii* Gu & Chen, **sp. nov.**, *M. shixui* Gu & Chen, **sp. nov.** and *M. subuncinata* Gu & Chen, **sp. nov.** In addition, we provide an updated illustrated key to all Chinese *Myrmecina* species.

## Key Words

China, Crematogastrini, new species, taxonomy

## Introduction

The ant genus *Myrmecina* Curtis, 1829 (Hymenoptera, Formicidae, Myrmicinae) represents a morphologically distinctive group characterized by a cylindrical petiole lacking a dorsal node and paired longitudinal carinae on the ventrolateral margins of the head. Ecologically, *Myrmecina* ants specialized on predation of oribatid mites (Masuko 1994; Bolton 2003). With a distribution spanning the Holarctic, Southeast Asia, and northeastern Australia, the genus currently comprises 106 valid species (Bolton 2025), exhibiting particularly high diversity in subtropical and temperate regions. A landmark revision by Okido et al. (2020) dramatically expanded the known diversity in Southeast Asia, describing 40 new species and highlighting the area as a global hotspot for *Myrmecina* radiation.

China's unique position at the interface of the Palearctic and Oriental biogeographic realms yielded a remarkably diverse *Myrmecina* fauna. Early taxonomic records (Forel 1912; Wheeler 1921) documented only scattered occurrences, while subsequent studies by Zhou (2001), Huang et al. (2008), and Zhou et al. (2008) expanded the known diversity to nine species. Previous studies on *Myrmecina* taxonomy have faced a major limitation — geographically restricted sampling. These constraints have led to persistent taxonomic ambiguities and an underestimation of endemic diversity in this genus. However, recent intensive sampling campaigns across southern China (particularly in Shaanxi, Yunnan, Guangxi, and Hainan) have revealed a significant undocumented diversity, with multiple putative new taxa awaiting description. A notable example is the work of Liu et al. (2022), who not only reported the first Chinese record of *M. raviwonghei*, but

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also described three new species (*M. eowilsoni*, *M. gaoligongensis*, *M. pierceae*) from Yunnan, bringing the total number of recognized Chinese species from thirteen to seventeen. These discoveries provide compelling evidence that the current taxonomic framework for Chinese *Myrmecina* requires urgent and comprehensive revision.

Prior research on Chinese *Myrmecina* has revealed notable patterns of regional endemism and distinctive morphological adaptations, including reduced antennal segment counts (Huang et al. 2008), specialized propodeal spine morphology (Zhou et al. 2008), and specific microhabitat preferences (Okido et al. 2020). Critical taxonomic uncertainties persist despite these advances, including questionable synonymies, widespread misidentifications in museum collections, and incomplete species descriptions. For example, *M. sinensis* Wheeler was justifiably elevated to species status based on diagnostic clypeal and sculptural characters (Zhou et al. 2008), while *M. guangxiensis* Zhou, 2001 was subsequently placed within a monophyletic group characterized by a unique sharp ridge of the shield wall on the lateral portion of the clypeus in front of the antennal insertions, which is similar as in *M. vieti* Okido et al., 2020.

This study provides a comprehensive review of these taxonomic challenges through a systematic examination of both historical and newly collected Chinese *Myrmecina* specimens. By employing detailed morphometric analyses, we: (1) revise the taxonomic status of all Chinese congeners, (2) describe eleven new species, and (3) present an illustrated identification key for Chinese fauna. Our results provide a foundation for future phylogenetic and ecological investigations in China.

## Materials and methods

The ant specimens examined in this study, including type specimens, are deposited in the following repositories: (1) GXNU (Insect Collection, Guangxi Normal University, Guilin, China); and (2) IZCAS (Institute of Zoology, Chinese Academy of Sciences, Beijing, China). Morphometric measurements of the 11 newly discovered *Myrmecina* species were obtained using the KEYENCE VHX-6000 3D digital microscope. Morphological line drawings were produced using Procreate software (version 5.3.15, Savage Interactive Pty Ltd, Tasmania, Australia). Morphology and terminology follow the standards of Bolton (1975). All measurements were recorded in millimeters and rounded to two decimal places.

**HL** Head Length. The maximum distance from the anterior-most point of the clypeal margin to the midpoint of a line drawn across the posterior margin of the head.

**HW** Head Width. The maximum width of head in full-face view, excluding the eyes.

**CI** Cephalic Index. Calculated as: (HW/HL) × 100.

**SL** Scape Length. Excluding the basal radicle.

**SI** Scape Index. Calculated as: (SL/HW) × 100.

**ED** Eye Diameter. The maximum diameter of eye measured in lateral view.

**MSL** Mesosomal length. Weber's length measured from the anterior-most point of the pronotal collar to the posterior-most point of the propodeal process.

**PW** Pronotal Width. The maximum width of mesosoma measured in dorsal view.

**PL** Petiole Length. The maximum diagonal length of petiole, measured in lateral view, from most anteroventral point of the peduncle, at or below the propodeal lobe, to the most posterodorsal point at the junction with the helical tergite.

**PH** Petiole Height. The maximum height of petiole, measured in lateral view from the highest point of the node to the ventral outline of the node.

**DPW** Petiole Width. The maximum width of the petiole in dorsal view.

**LPI** Petiole length index. Being use to compare the petiolar length-to-width ratio, calculated as: (PH/PL) × 100. It assesses the length-to-height ratio of the petiole, reflecting its relative height.

**DPI** Dorsal petiole index. Defined as the ratio of petiole length (PL) to dorsal petiole width (DPW), calculated as: (DPW/PL) × 100. It quantifies the length-to-width ratio of the petiole, indicating its relative width.

**PPL** Postpetiole length. The maximum diagonal length of postpetiole, measured in lateral view, from the posterior margin of the petiolar–postpetiolar articulation to the anterior margin of the postpetiole–gaster articulation.

**GL** Gastral length. The maximum length of the gastral in lateral view.

**TL** Total Length. The maximum length of specimen measured from the tip of the mandibles to the tip of the abdominal segment VII, excluding the sting. Due to the position of the specimen, total length was measured as the sum of head length + mesosomal length, petiole and postpetiole length + gaster length.

## Results

### *Myrmecina* Curtis, 1829

*Myrmecina* Curtis, 1829: 265. Type-species: *Myrmecina latreillii* (junior synonym of *Formica graminicola*), by monotypy.

*Archaeomyrmex* Mann, 1921: 448. Synonymized by Brown 1971: 1.

**Worker morphology.** (1) Monomorphic; small body size; (2) head rectangular, posterior cephalic carina distinct, extending to the lower part of the posterior cephalic margin and gradually expanding to the anterior lateral sides of the ventral head; (3) mandibles subtriangular, apical and subapical teeth well developed, remaining teeth usually reduce or indistinct; (4) palpal

formula typically 4, 3 or 3, 2; (5) clypeus with posterior portion inserted between frontal lobes; anterior margin emarginate, with two lateral corners, usually bearing a small median denticle; (6) frontal lobes covering the antennal fossae; (7) antennae 11–12 segments, with a distinct 3-segmented club; (8) eyes small to medium-sized, ocelli absent; (9) promesonotal suture and metanotal groove absent, promesonotal dorsum weakly convex; (10) propodeum armed with distinct spines or teeth; (11) petiole without anterior peduncle, dorsal surface usually with a median denticular projection.

This study documents the following 28 species in China, including 11 new species, as listed below:

*M. asiatica* Okido, Ogata & Hosoishi, 2020 Yunnan; THAILAND, MALAYSIA, INDONESIA.
*M. asthena* Okido, Ogata & Hosoishi, 2020 Yunnan; VIETNAM, MALAYSIA.
*M. carinolateralis* Gu & Chen, sp. nov. Xizang.
*M. curvispina* Zhou, Huang & Ma, 2008 Guangxi.
*M. eowilsoni* Liu, 2022 Yunnan.
*M. flavipeda* Gu & Chen, sp. nov. Guangxi, Guangdong.
*M. gaoligongensis* Liu, 2022 Yunnan.
*M. globicephala* Gu & Chen, sp. nov. Guangxi.
*M. graminicola* (Latreille, 1802) Guangxi, Guangdong, Zhejiang; UK, DENMARK, GERMANY, RUSSIA.
*M. guangxiensis* Zhou, 2001 Guangxi, Hunan, Yunnan; VIETNAM.
*M. hamula* Zhou, Huang & Ma, 2008 Guangxi, Shaanxi.
*M. hirsuta* Gu & Chen, sp. nov. Zhejiang.
*M. jiachengi* Gu & Chen, sp. nov. Shaanxi.
*M. kaigong* Terayama, 2009 Taiwan.
*M. laevidorsa* Gu & Chen, sp. nov. Guangxi.
*M. pauca* Huang, Huang & Zhou, 2008 Guangxi, Hunan.
*M. pierceae* Liu, 2022 Yunnan.
*M. planiclypea* Gu & Chen, sp. nov. Guangxi.
*M. raviwonghei* Jaitrong, Samung, Waengsothorn & Okido, 2019 Yunnan; THAILAND.
*M. rugosodorsum* Gu & Chen, sp. nov. Chongqing.
*M. sauteri* Forel, 1912 Guangxi, Jiangxi, Zhejiang, Taiwan.
*M. shanyii* Gu & Chen, sp. nov. Hainan.
*M. shixui* Gu & Chen, sp. nov. Yunnan.
*M. sinensis* Wheeler, 1921 Guangxi, Yunan, Zhejiang, Liaoning.
*M. striata* Emery, 1889 Jiangsu (dubious), Sichuan (dubious), Yunnan (dubious); INDIA, MYANMAR, SRI LANKA.
*M. strigis* Lin &Wu, 1998 Taiwan.
*M. subuncinata* Gu & Chen, sp. nov. Hainan.
*M. taiwana* Terayama, 1985 Guangxi, Yunnan, Taiwan.

## Key to Chinese *Myrmecina* species based on the worker caste

1 Antenna with 11 segments (Fig. 1A) ..... *M. pauca*
– Antenna with 12 segments (Fig. 1B) ..... 2

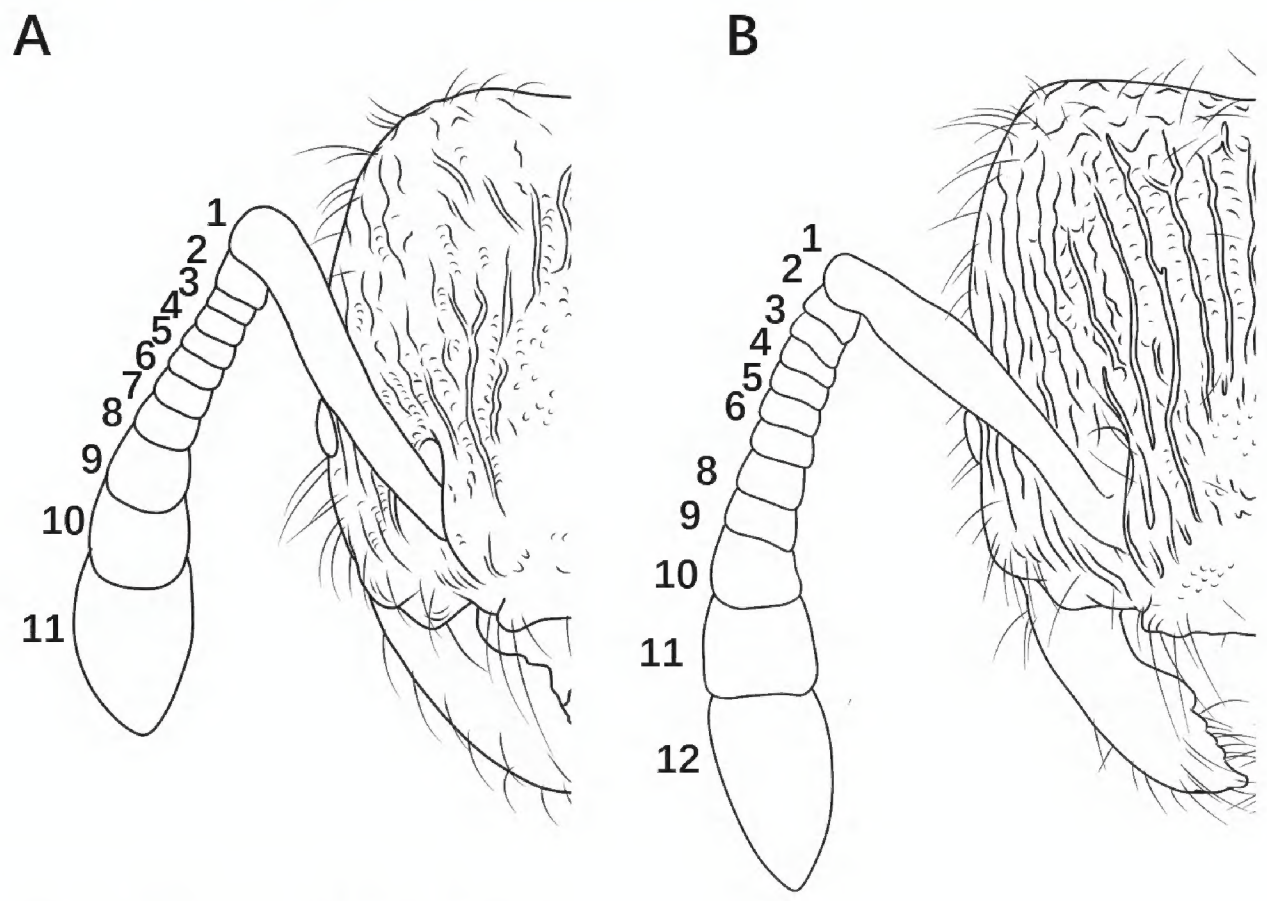


**Figure 1.** Antennal segments. **A.** *M. pauca*; **B.** *M. sinensis*.

2 In full-face view, occipital margin convex (Fig. 2A) ..... *M. globicephala* Gu & Chen, sp. nov.
– In full-face view, occipital margin straight or concave (Fig. 2B) ..... 3
3 Lateral portion of clypeus raised into sharp ridge, connected with the front ridge of the antennal torulus (Fig. 3A)..... 4
– Lateral portion of clypeus raised into sharp ridge, but not connected with the front ridge of the antennal torulus (Fig. 3B)..... 13

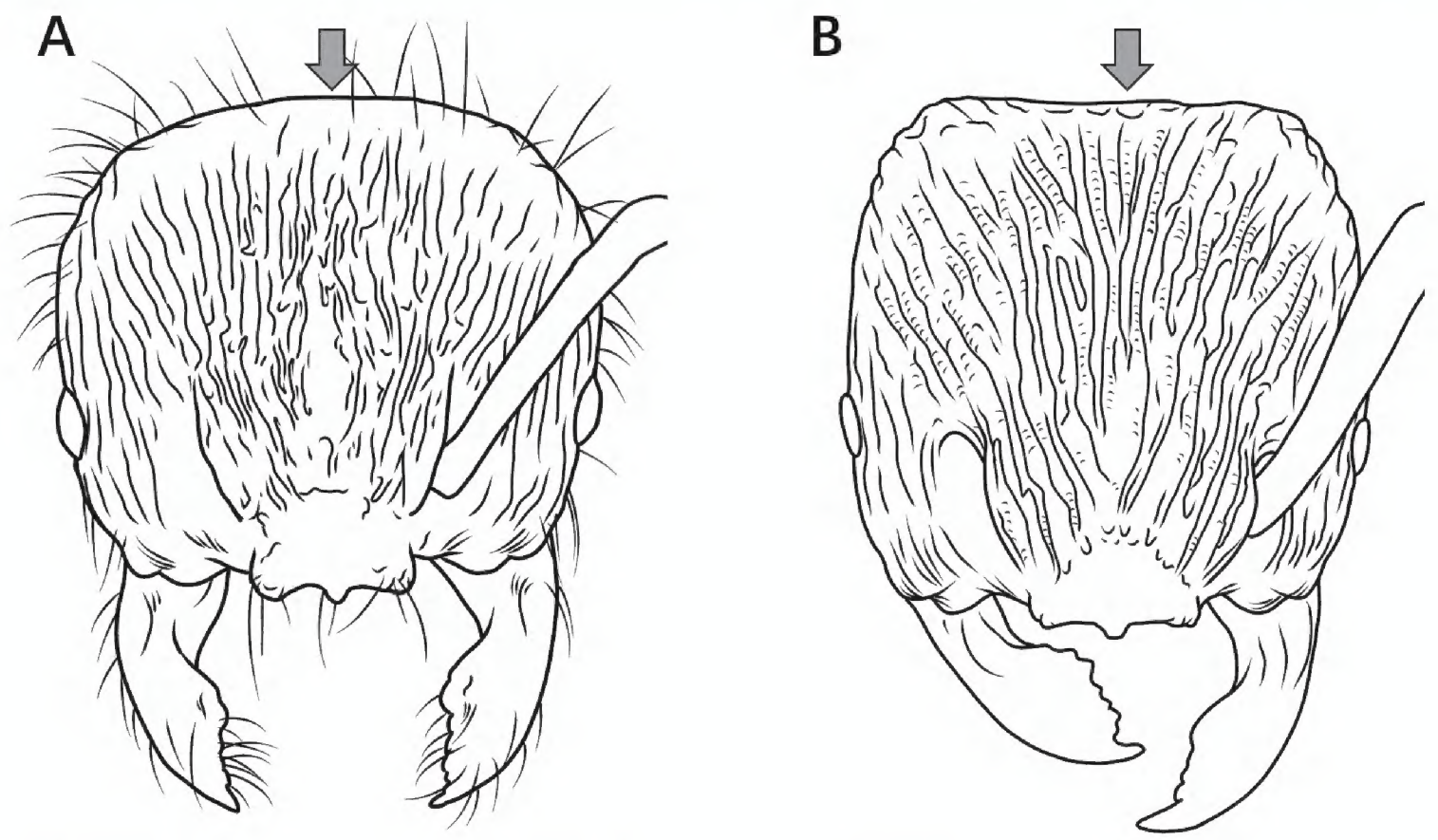


**Figure 2.** Head in full-face view. **A.** *M. globicephala* Gu & Chen, sp. nov.; **B.** *M. carinolateralis* Gu & Chen, sp. nov.

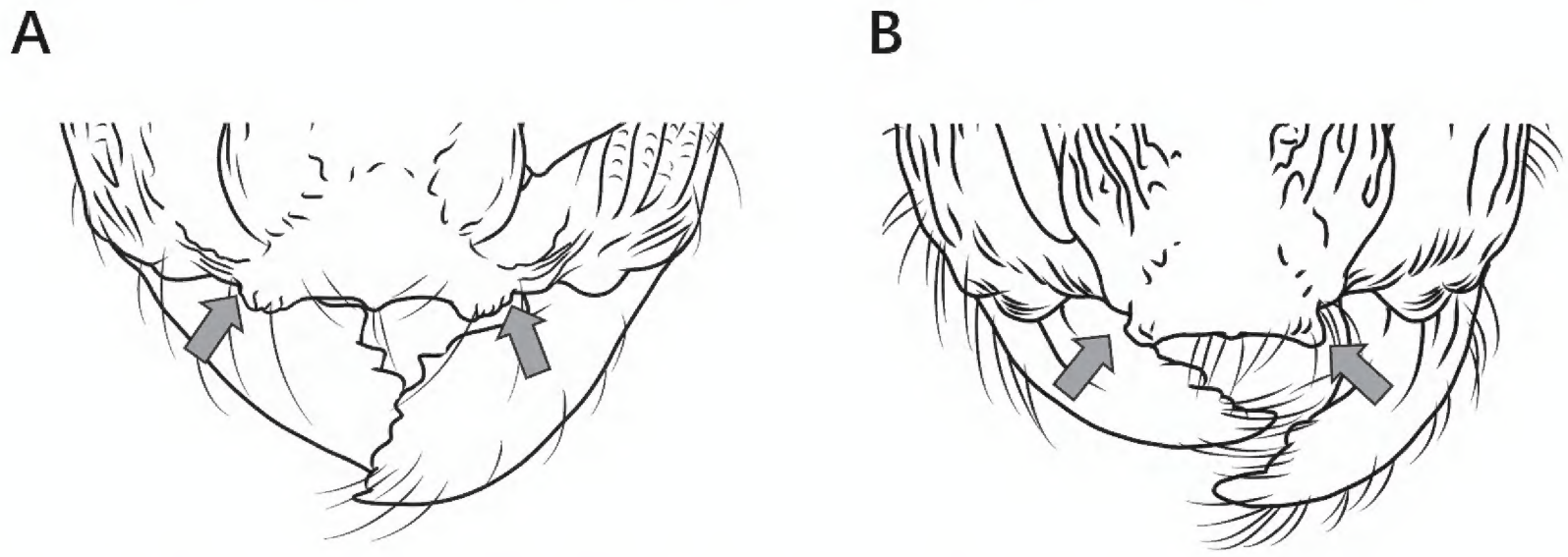


**Figure 3.** Clypeus and antennal torulus. **A.** *M. eowilsoni*; **B.** *M. hirsuta* Gu & Chen, sp. nov.

4 Scapes with dense striae, appearing dull (Fig. 4A) ..... 5
– Scapes smooth or with fewer striae, appearing shining (Fig. 4B) ..... 6

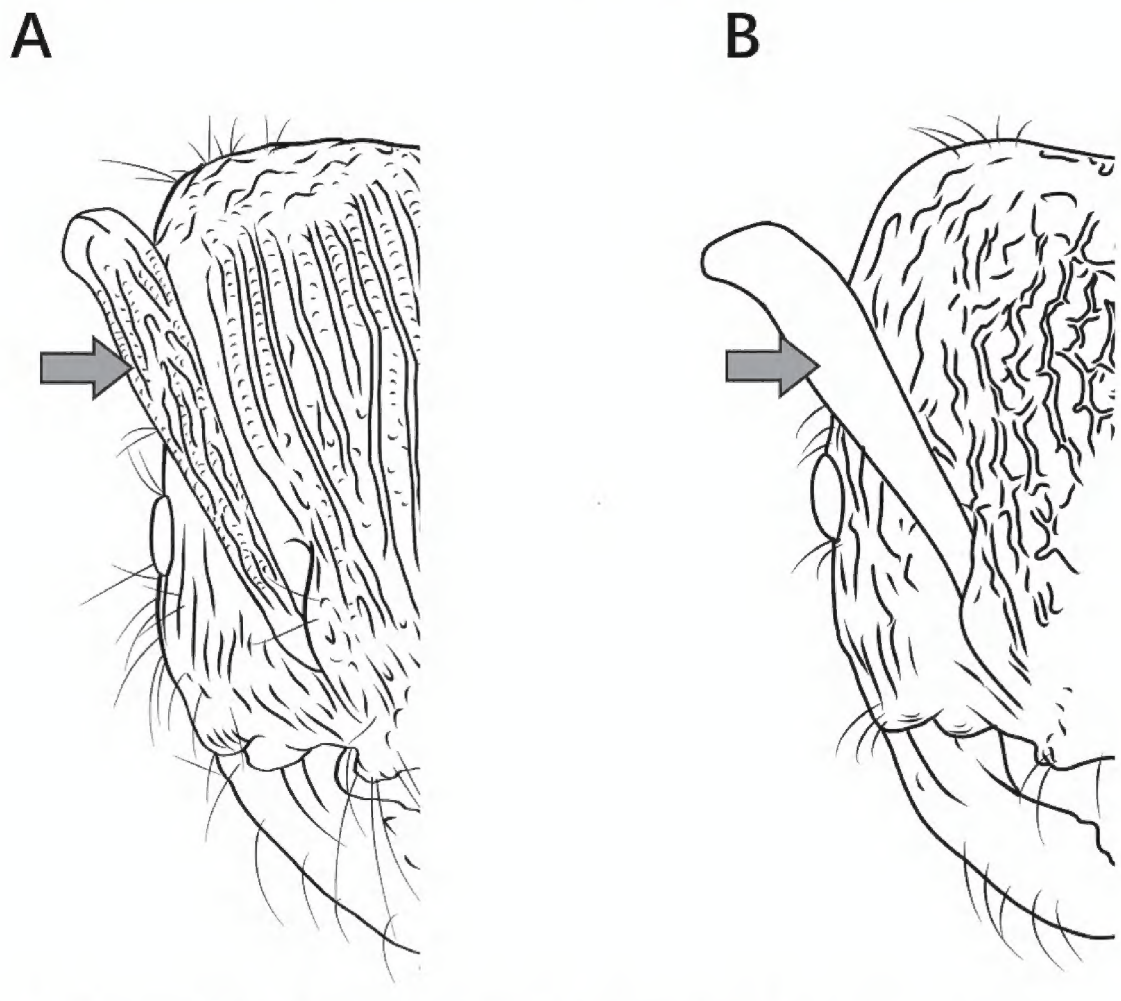


**Figure 4.** Antennal scapes. **A.** *M. shixui* Gu & Chen, sp. nov.; **B.** *M. jiachengi* Gu & Chen, sp. nov.

5 In full-face view, head with irregular waved longitudinal striae (Fig. 5A); mesosomal dorsum with waved longitudinal rugae and transverse rugae (Fig. 5C) ..... *M. shanyii* Gu & Chen, sp. nov.
– In full-face view, head with regular straight longitudinal striae (Fig. 5B); mesosomal dorsum with regular to undulate longitudinal straight striae (Fig. 5D) ..... *M. shixui* Gu & Chen, sp. nov.

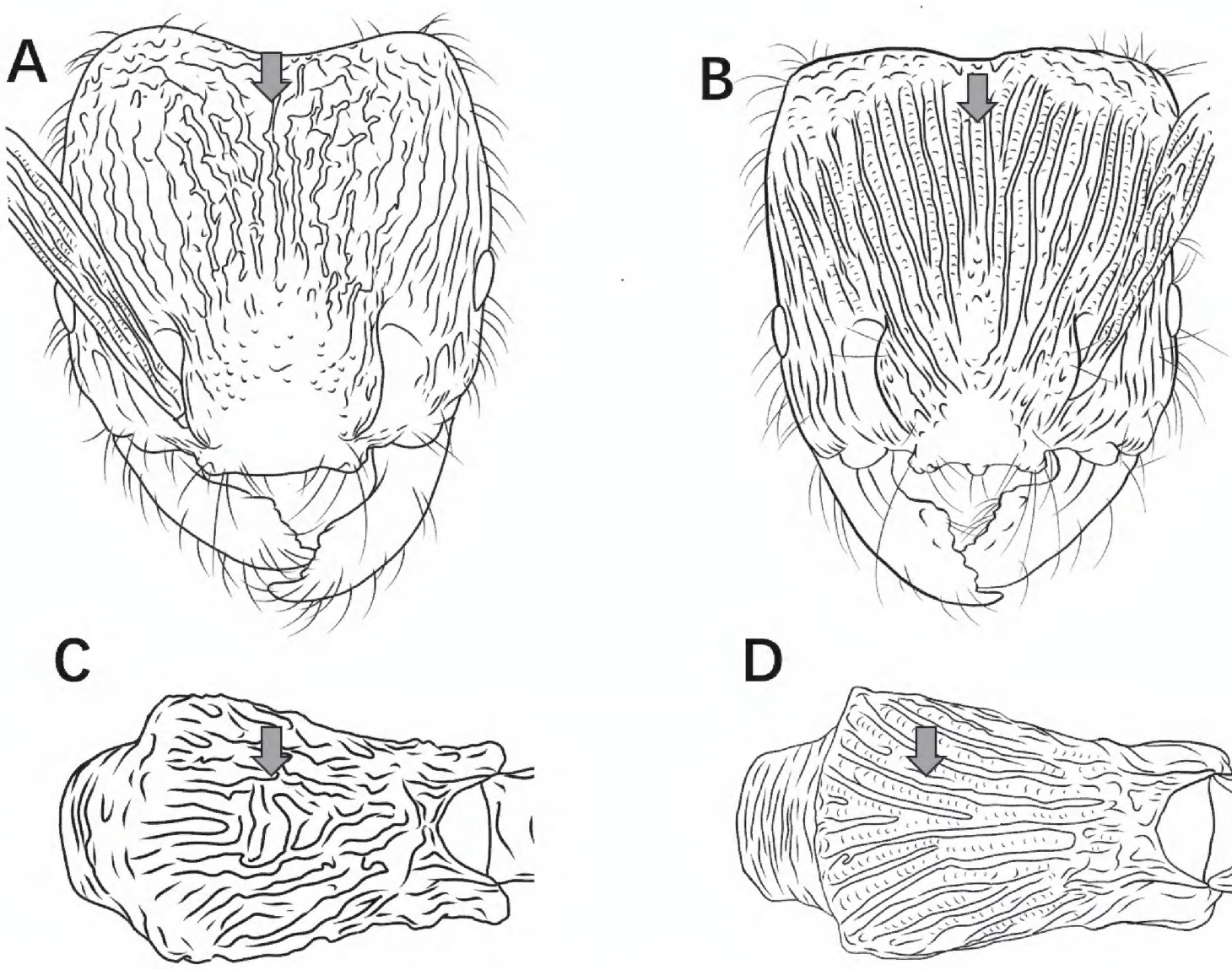


**Figure 5.** Head in full-face view and mesosoma in dorsal view. **A, C.** *M. shanyii* Gu & Chen, sp. nov.; **B, D.** *M. shixui* Gu & Chen, sp. nov.

6 In dorsal view, postpetiole with anterior portion distinctly wider than posterior portion (Fig. 6A).....*M. eowilsoni*
– In dorsal view, postpetiole with anterior portion nearly as wide as posterior portion (Fig. 6B) ..... 7

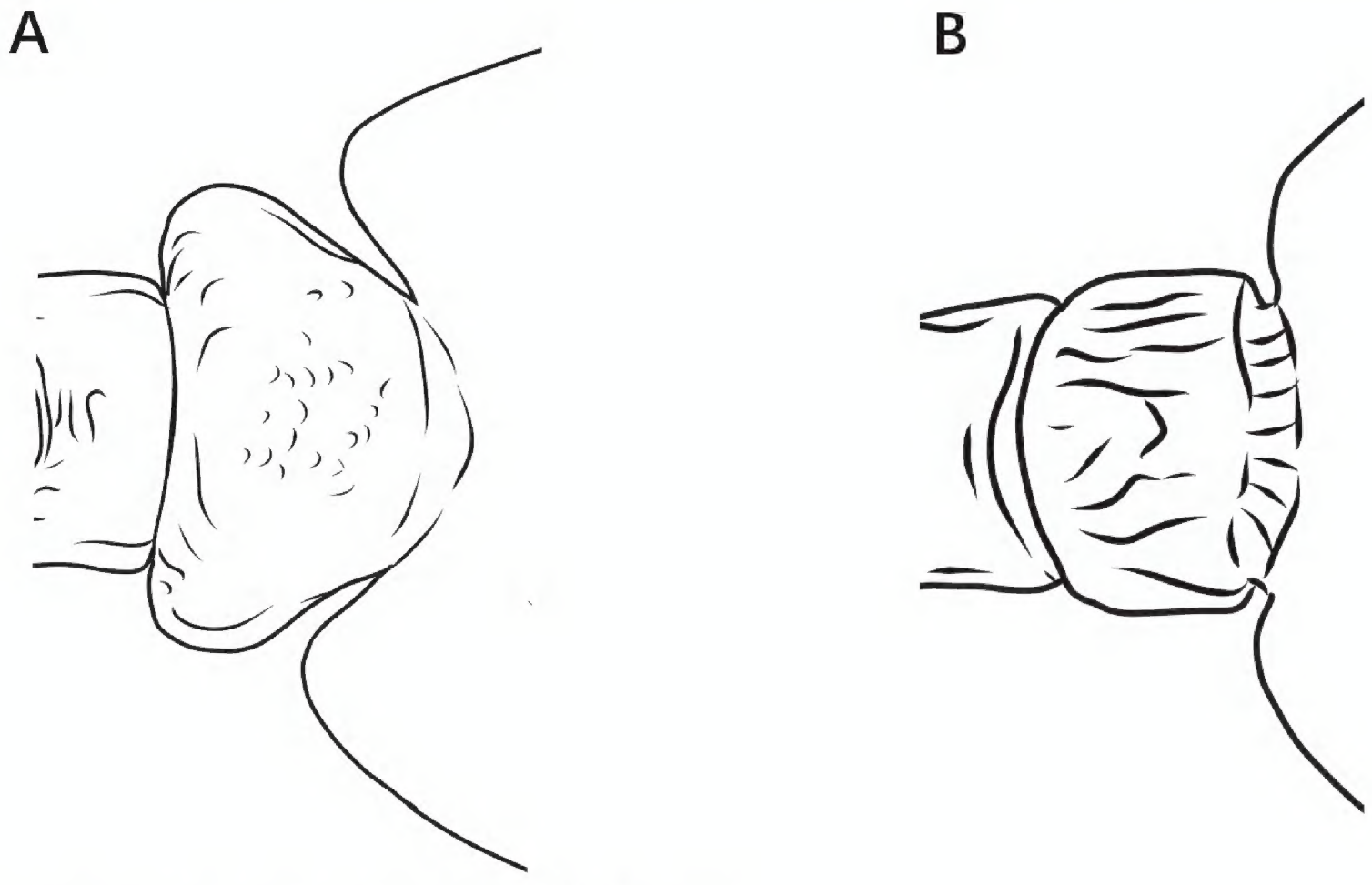


**Figure 6.** Postpetiole in dorsal view. **A.** *M. eowilsoni*; **B.** *M. sinensis*.

7 Mesosomal dorsum smooth and shining (Fig. 7A) ..... *M. laevidorsa* Gu & Chen, sp. nov.
– Mesosomal dorsum with many or dense striae or rugae (Fig. 7B) ..... 8

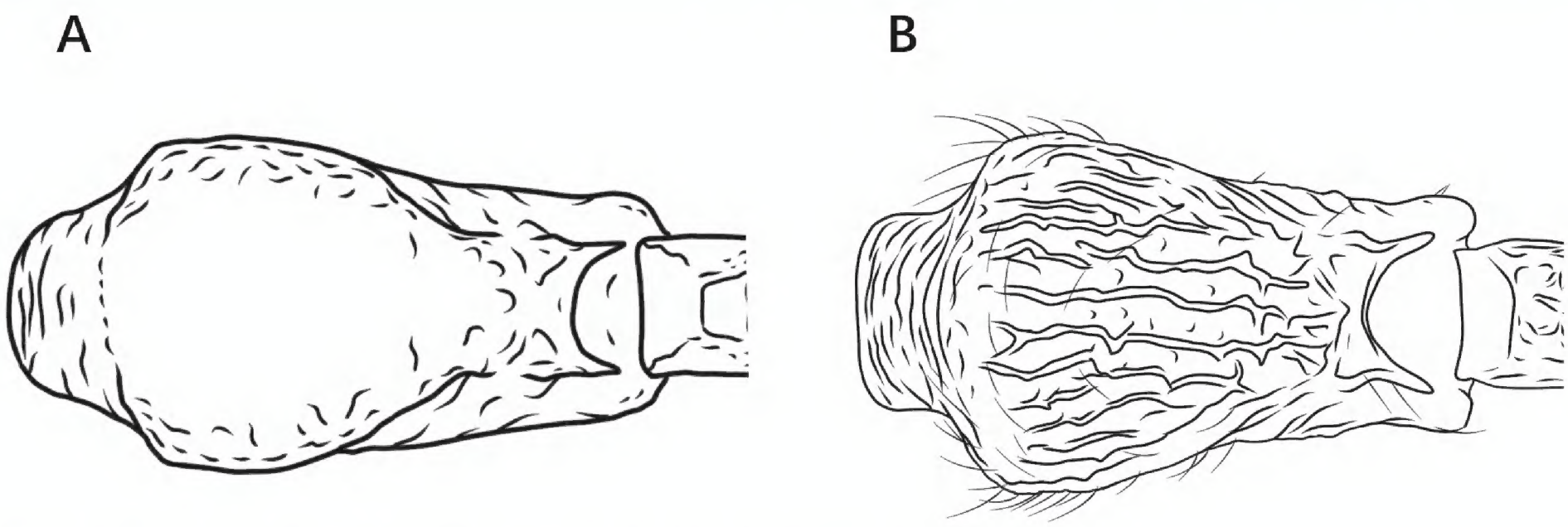


**Figure 7.** Mesosoma in dorsal view. **A.** *M. laevidorsa* Gu & Chen, sp. nov.; **B.** *M. sinensis*.

8 Gastral tergite I with weak reticulations (Fig. 8A)..... *M. sauteri*
– Gastral tergite I smooth and shining (Fig. 8B)..... 9

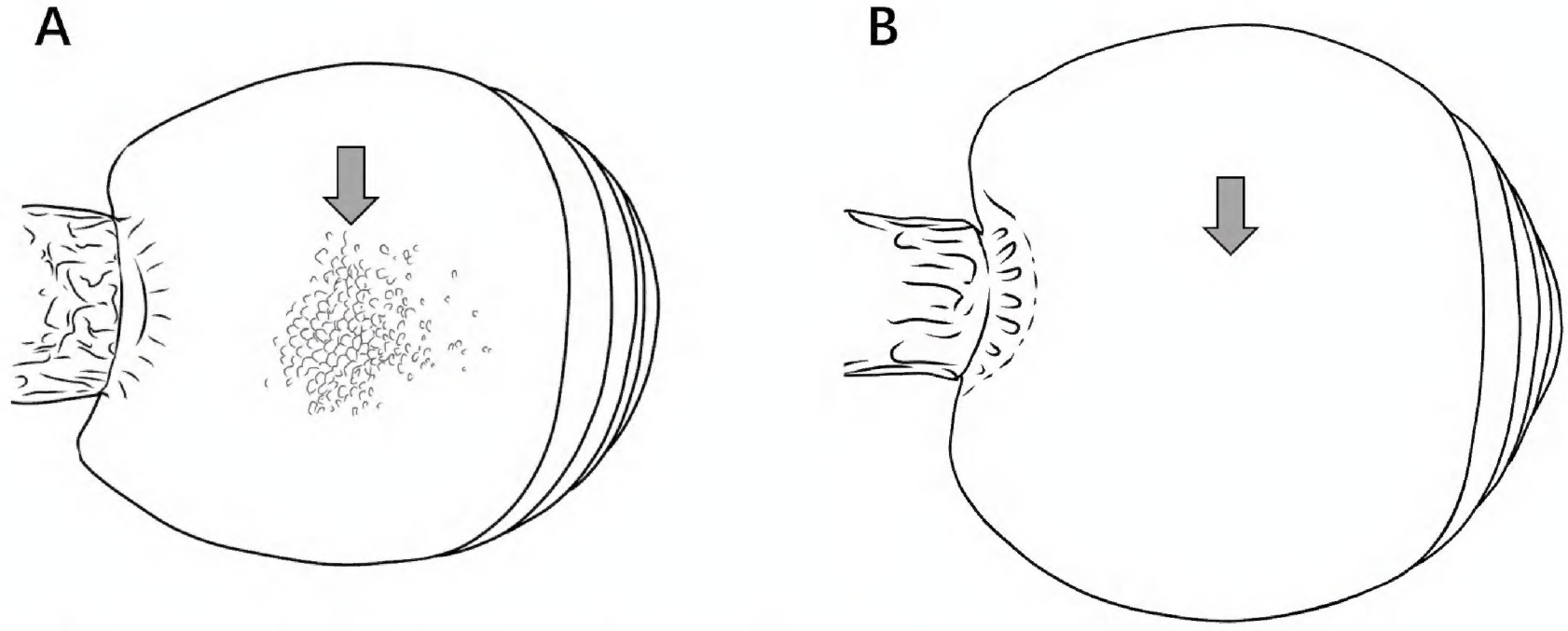


**Figure 8.** Gaster in dorsal view. **A.** *M. sauteri*; **B.** *M. flavipeda* Gu & Chen, sp. nov.

9 Mesosomal dorsum with irregular waved longitudinal rugae (Fig. 9A)..... 10
– Mesosomal dorsum with regular straight longitudinal striae (Fig. 9B)..... 11

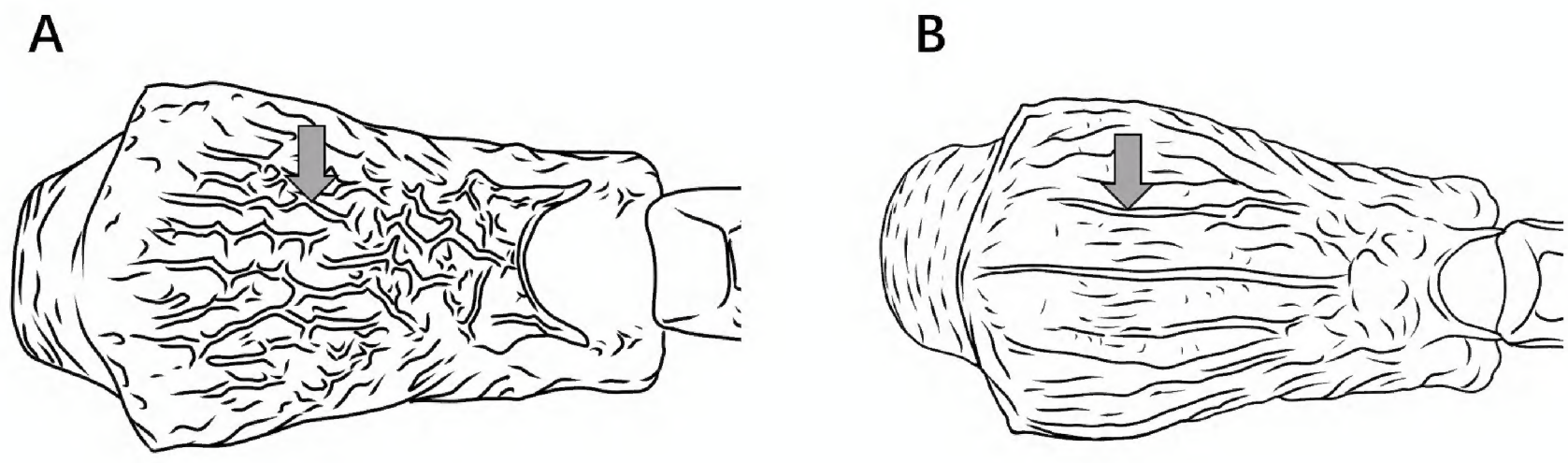


**Figure 9.** Mesosoma in dorsal view. **A.** *M. planiclypea* Gu & Chen, sp. nov.; **B.** *M. flavipeda* Gu & Chen, sp. nov.

10 In full-face view, anterior clypeal margin concave, armed with a median denticle (Fig. 10A); anterodorsal postpetiolar surface without sculpture, smooth (Fig. 10C)..... *M. guangxiensis*
– In full-face view, anterior clypeal margin straight, without a median denticle (Fig. 10B); anterodorsal postpetiolar surface with rugae (Fig. 10D)..... *M. planiclypea* Gu & Chen, sp. nov.

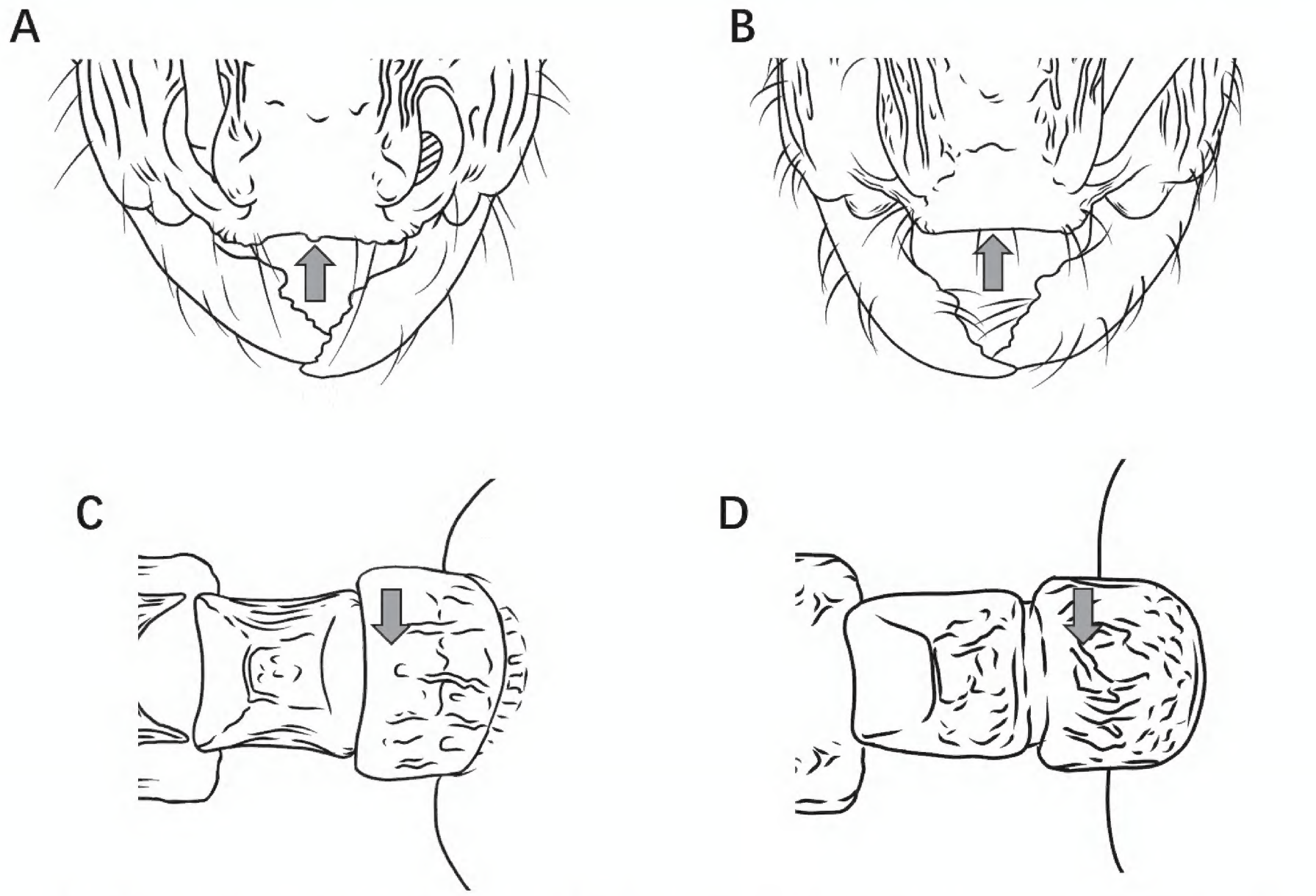


**Figure 10.** Anterior clypeal margin in full-face view and postpetiolar dorsum. **A, C.** *M. guangxiensis*; **B, D.** *M. planiclypea* Gu & Chen, sp. nov.

11 Mesosomal dorsum with even longitudinal striae, the striae rather thick and straight (Fig. 11A) ..... *M. kaigong*
– Mesosomal dorsum with 1–3 primary deeper longitudinal striae markedly deeper and more distinct than other striae (Fig. 11B)..... 12

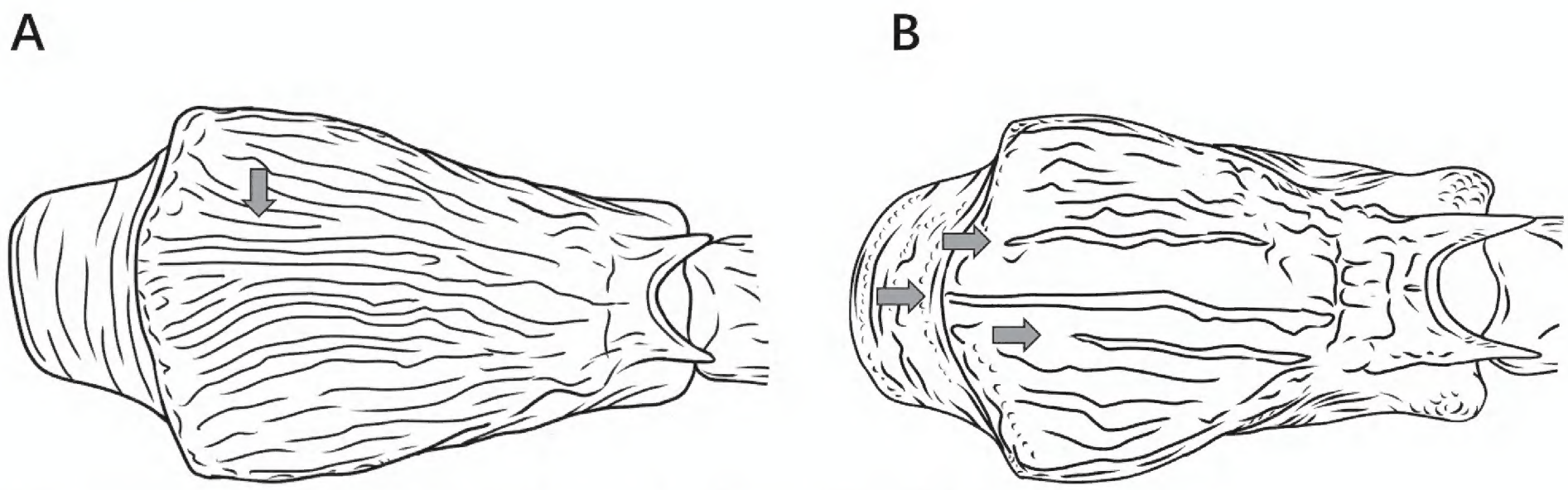


**Figure 11.** Mesosoma in dorsal view. **A.** *M. kaigong*; **B.** *M. flavipeda* Gu & Chen, sp. nov.

12 In full-face view, head with regular straight longitudinal striae, anterior margin of clypeus with a median denticle (Fig. 12A); propodeal spiracle large, its diameter approximately equal to the distance between it and the propodeal declivity (Fig. 12C); in lateral view, propodeal spine relatively short, length approximately equal basal width, apex acute and directed posterodorsally (Fig. 12C) ..... *M. flavipeda* Gu & Chen, sp. nov.
– In full-face view, head with irregular waved rugae, anterior margin of clypeus lacking a median denticle (Fig. 12B); propodeal spiracle small, its diameter less than half of the distance between it and the propodeal declivity (Fig. 12D); in lateral view, propodeal spine relatively long, length > 1.5 times basal width, apex upturned (Fig. 12D) ..... *M. taiwana*
13 Mesosomal dorsum with irregular waved rugae (Fig. 13A) ..... *M. rugosodorsum* Gu & Chen, sp. nov.
– Mesosomal dorsum with regular straight longitudinal striae (Fig. 13B)..... 14
14 In dorsal view, propodeal spines long, more than 3 times as long as their basal width (Fig. 14A) ..... 15
– In dorsal view, propodeal spines short, less than 1.5 times as long as their basal width (Fig. 14B) ..... 20

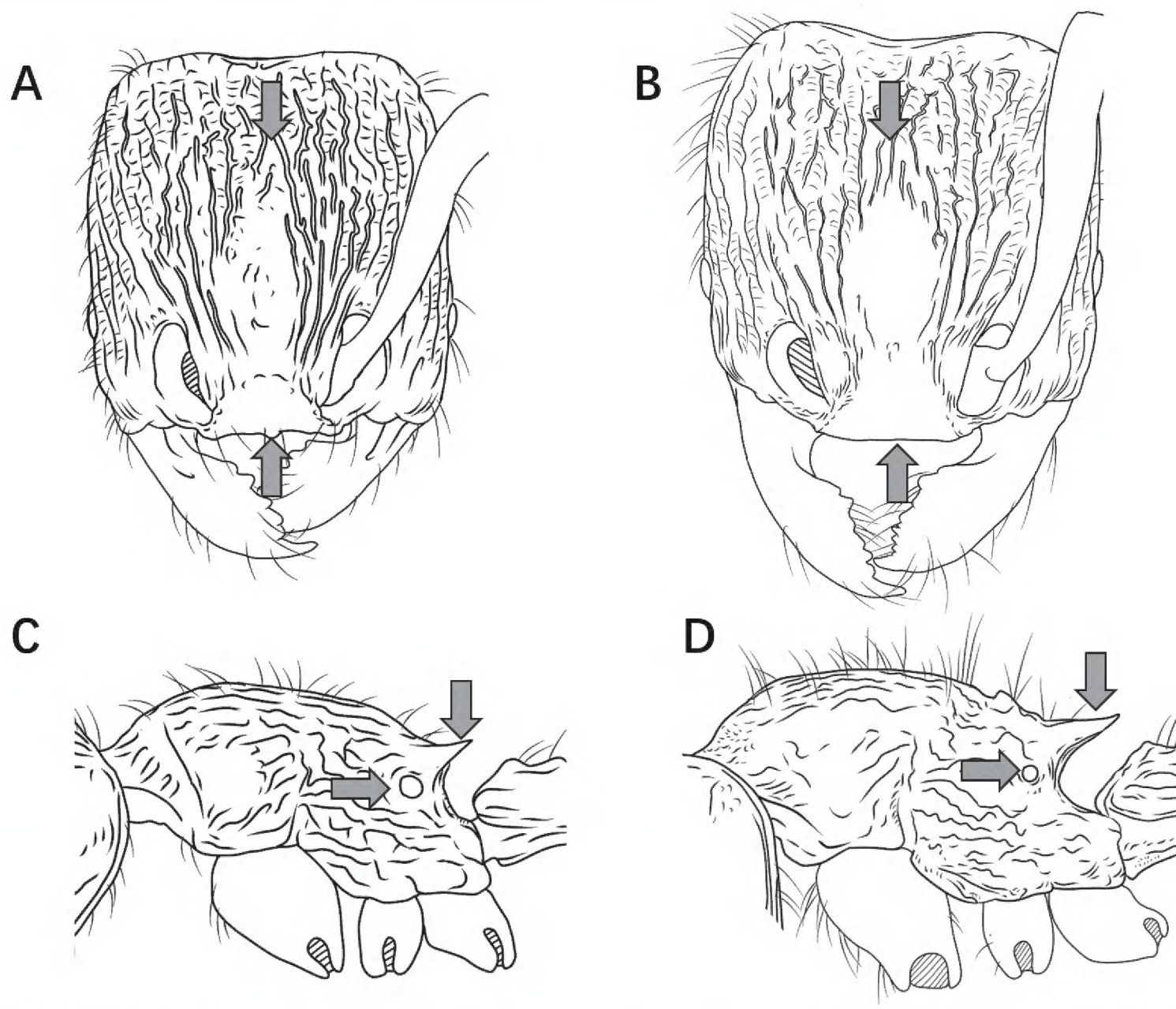


**Figure 12.** Head in full-face view and mesosoma in lateral view. **A, C.** *M. flavipeda* Gu & Chen, sp. nov.; **B, D.** *M. taiwana.*

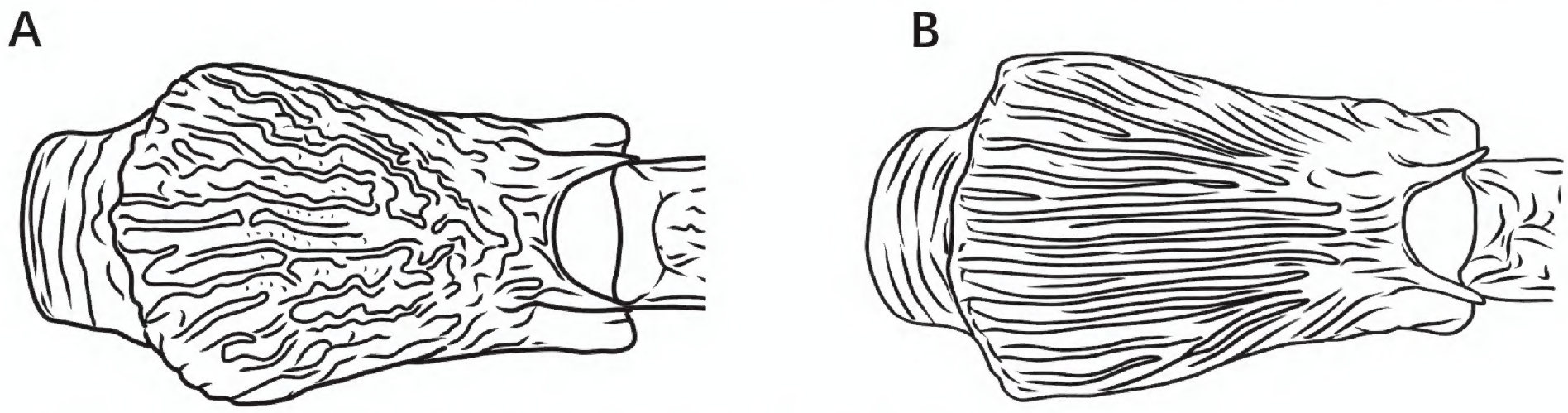


**Figure 13.** Mesosoma in dorsal view. **A.** *M. rugosodorsum* Gu & Chen, sp. nov.; **B.** *M. raviwonghei.*

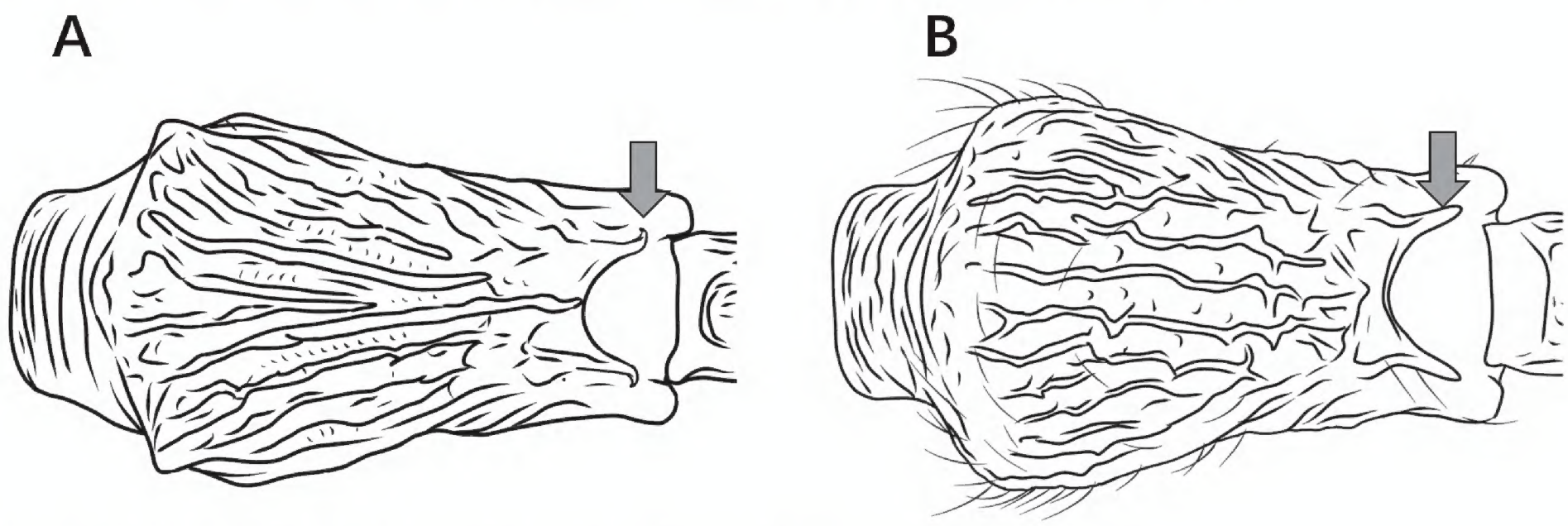


**Figure 14.** Mesosoma in dorsal view. **A.** *M. carinolateralis* Gu & Chen, sp. nov.; **B.** *M. sinensis.*

15 In full-face view, head with dense granulate (Fig. 15A).....*M. asthena*
– In full-face view, head with deeply impressed longitudinal striae and sparse rugae (Fig. 15B) ..... 16

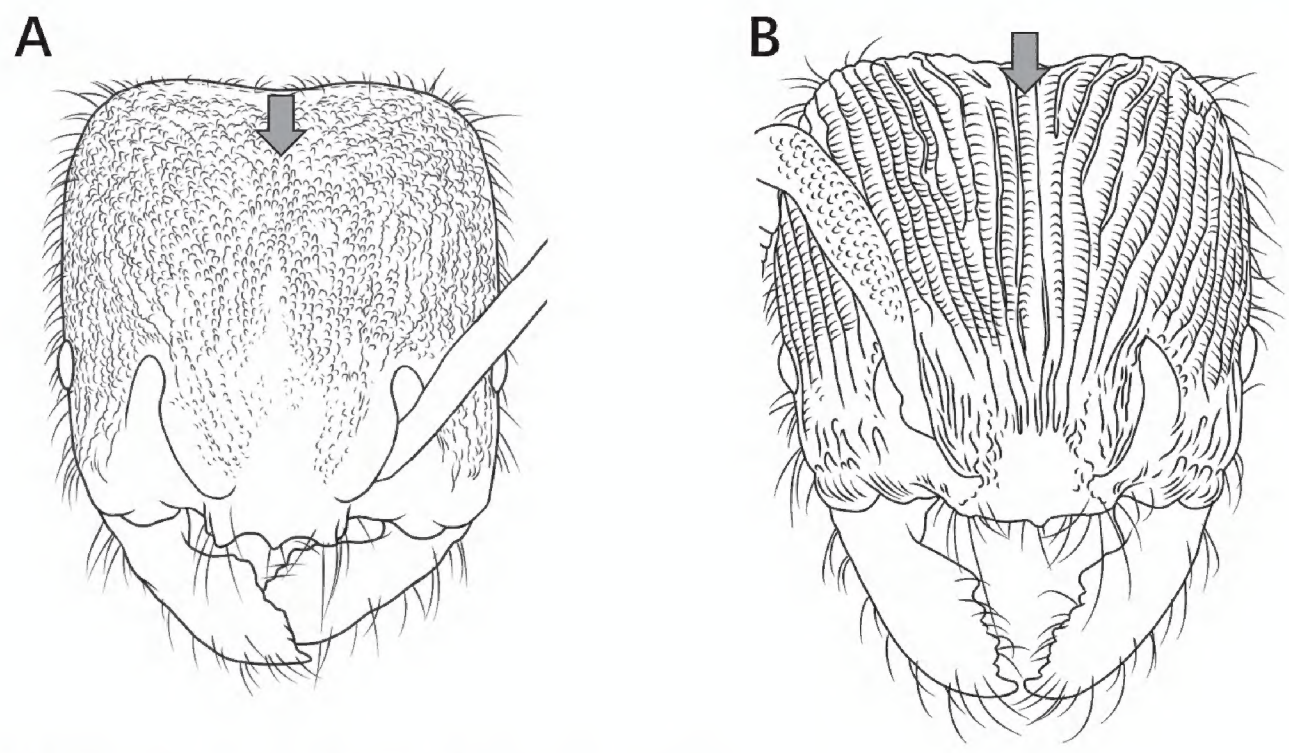


**Figure 15.** Head in full-face view. **A.** *M. asthena*; **B.** *M. raviwonghei*.

16 Propodeal spines point backward and straight in lateral view (Fig. 16A) ..... 17
– Propodeal spines point backward and apex slightly upturned in lateral view (Fig. 16B)..... 18

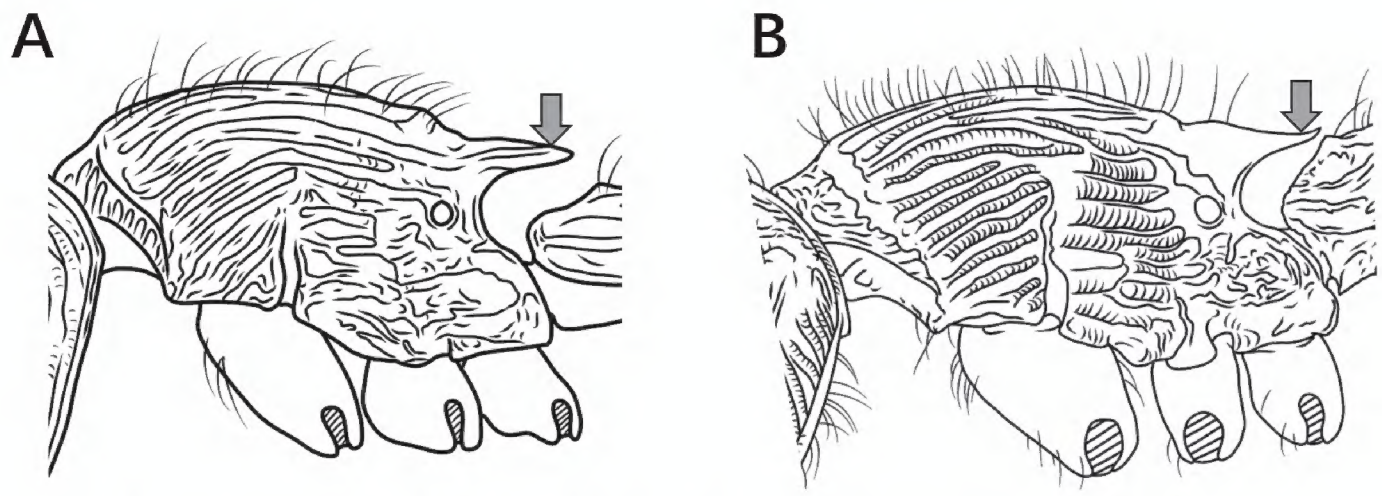


**Figure 16.** Mesosoma in lateral view. **A.** *M. carinolateralis* Gu & Chen, sp. nov.; **B.** *M. raviwonghei*.

17 Ventrolateral portion of head smooth and shining (Fig. 16A); gastral tergite I smooth and shining (Fig. 17C)..... ..... *M. curvispina*
– Ventrolateral portion of head with distinct coarse longitudinal carinae (Fig. 16B); gastral tergite I slightly microreticulate (Fig. 17D) ..... *M. carinolateralis* Gu & Chen, sp. nov.

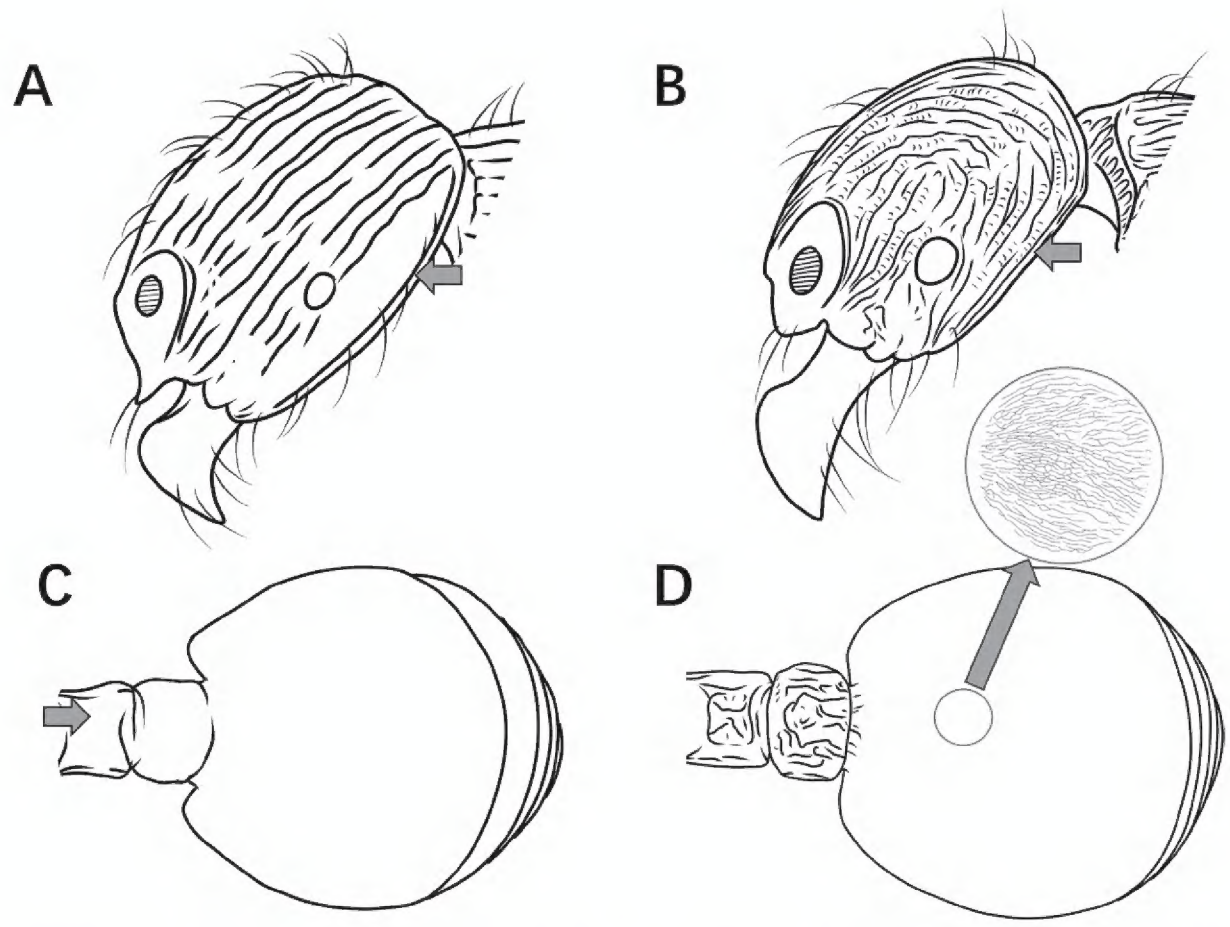


**Figure 17.** Head in lateral view and gaster in dorsal view. **A, C.** *M. curvispina*; **B, D.** *M. carinolateralis* Gu & Chen, sp. nov.

18 In full-face view, anterior margin of clypeus without a median denticle; gastral tergite I smooth and shining (Fig. 18A). ..... *M. striata*

– In full-face view, anterior margin of clypeus with a median denticle; gastral tergite I prominent or slightly reticulate (Fig. 18B)..... 19

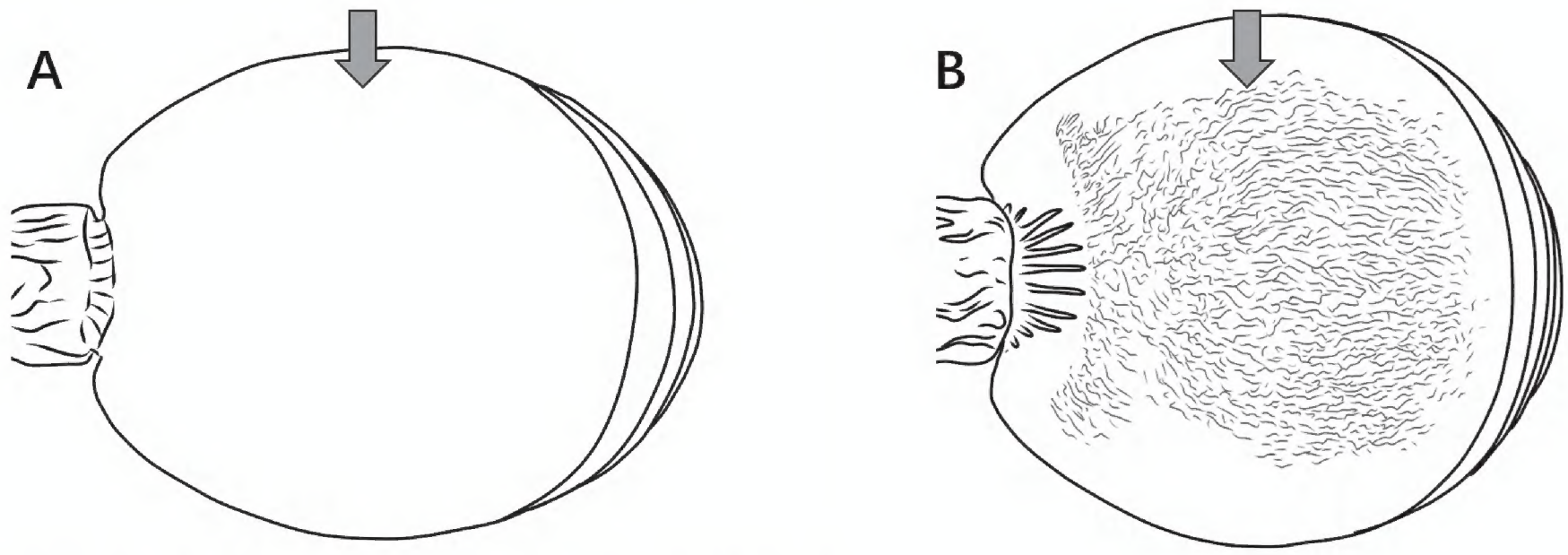


**Figure 18.** Gastrer in dorsal view. **A.** *M. striata*; **B.** *M. raviwonghei*.

19 Anterior clypeal margin almost straight (Fig. 19A); ventrolateral portion of head with distinct longitudinal striae; ventral margin of petiole nearly straight (Fig. 19C); gastral tergite I with thin waved rugae (Fig. 19E)..... *M. raviwonghei*

– Anterior clypeal margin concave (Fig. 19B); ventrolateral portion of head without distinct longitudinal striae, shining; ventral margin of petiole concave (Fig. 19D); gastral tergite I with fine and sparse reticulations (Fig. 19F)..... ..... *M. subuncinata* Gu & Chen, sp. nov.

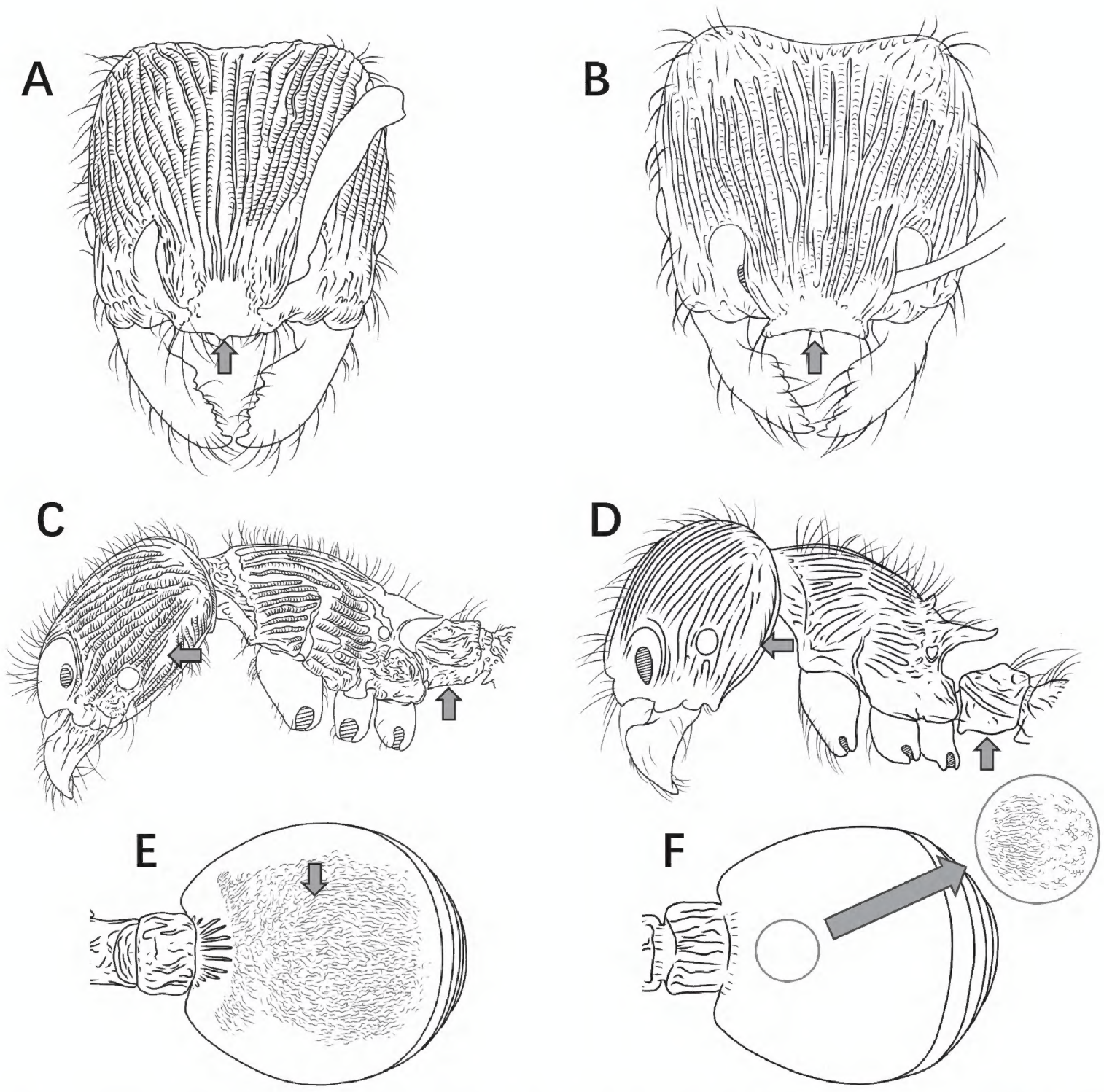


**Figure 19.** Head in full-face view, body in lateral view, and gaster in dorsal view. **A, C, E.** *M. raviwonghei*. **B, D, F.** *M. subuncinata* Gu & Chen, sp. nov.

20 Propodeal spines with hooked apex in dorsal view (Fig. 20A)..... *M. hamula*
– Propodeal spines straight in dorsal view, lacking hooked apex (Fig. 20B)..... 21

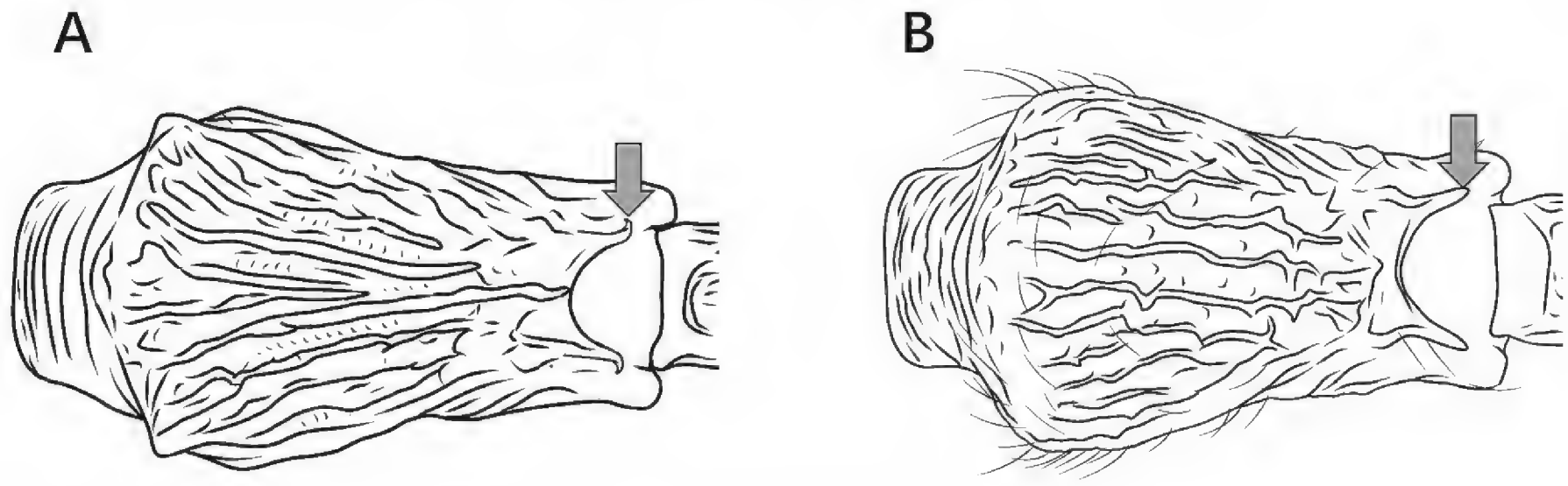


**Figure 20.** Propodeal spine in dorsal view. **A.** *M. hamula*; **B.** *M. sinensis*.

21 The frontal lobe well-developed and completely covers the antennal torulus; Head in full-face view with reticulations (Fig. 21A); mesosomal dorsum with reticulations (Fig. 21C) ..... *M. jiachengi* Gu & Chen, sp. nov.
– The frontal lobe not completely cover the antennal torulus; Head in full-face view with longitudinal striae or rugae (Fig. 21B); mesosomal dorsum with longitudinal rugae (Fig. 21D) ..... 22

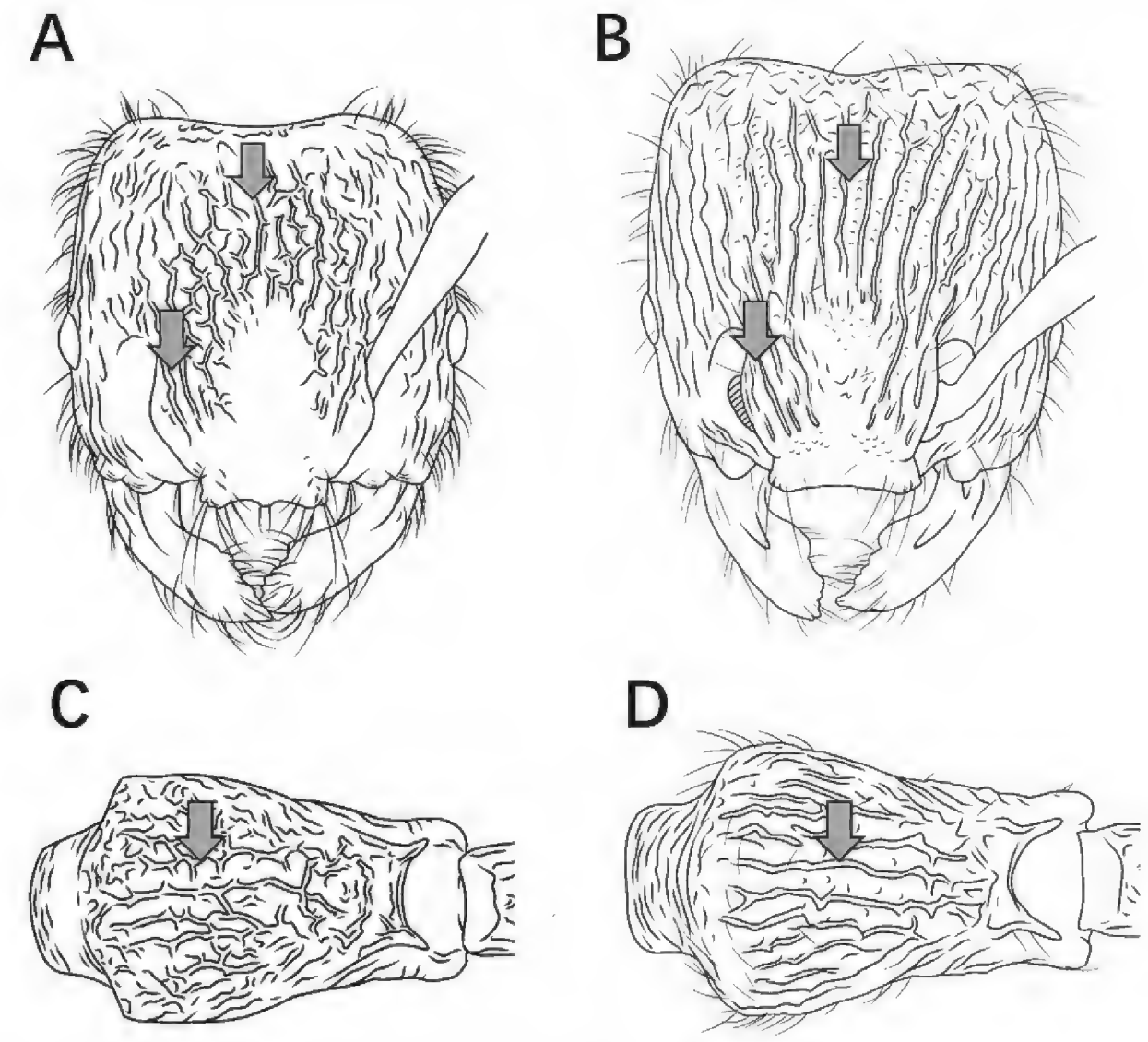


**Figure 21.** Mesosoma in dorsal view. **A, C.** *M. jiachengi* Gu & Chen, sp. nov.; **B, D.** *M. sinensis*.

22 Propodeal spines pointing dorsally (Fig. 22A); postpetiole in dorsal view with irregular rugae (Fig. 22C)..... *M. sinensis*
– Propodeal spines pointing posteriorly (Fig. 22B); postpetiole in dorsal view with longitudinal striae or smooth anteriorly (Fig. 22D) ..... 23
23 Anterodorsal surface of postpetiole without longitudinal striae, smooth (Fig. 23A) ..... *M. graminicola*
– Anterodorsal surface of postpetiole with longitudinal striae or rugae (Fig. 23B)..... 24
24 Head in full-face view with longitudinal or waved rugae posteriorly curving towards occipital corners (Fig. 24A)..... 25
– Head in full-face view with straight longitudinal striae not curving towards the occipital corners (Fig. 24B)..... 26
25 Head with irregular waved rugae in full-face view (Fig. 25A); head dorsum with waved parallel longitudinal rugae; median portion of occipital margin concave (Fig. 25A); eyes large, composed of more than 30 ommatidia (Fig. 25B); mesopleuron with parallel transverse striae (Fig. 25B)..... *M. hirsuta* Gu & Chen, sp. nov.
– Head with straight longitudinal striae in full-face view (Fig. 25C); head dorsum with posteriorly diverging rugae; median portion of occipital margin straight (Fig. 25C); eyes small, composed of less than 15 ommatidia (Fig. 25D); mesopleuron with irregular rugae (Fig. 25D)..... *M. pierceae*

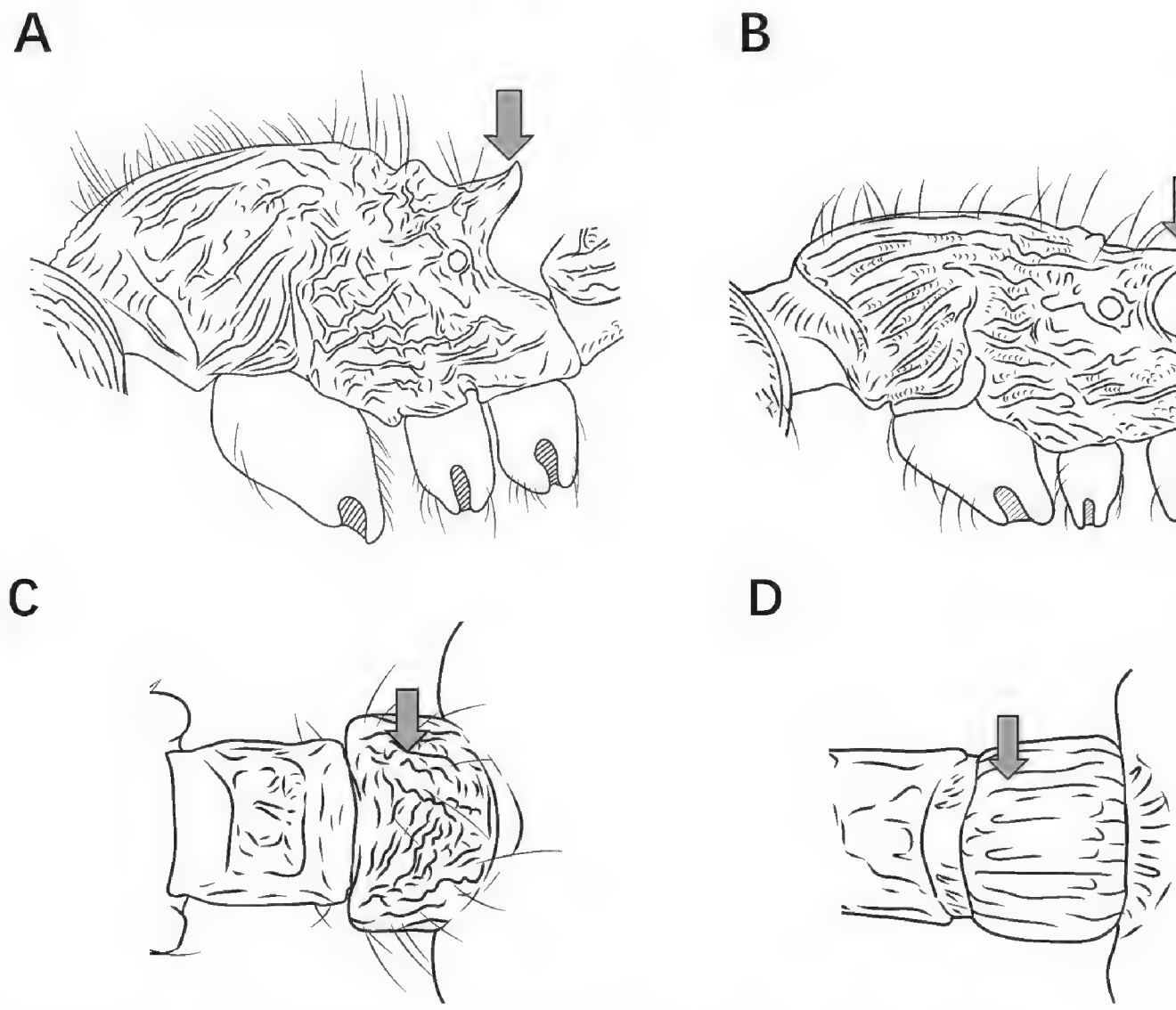


**Figure 22.** Mesosoma in lateral view and postpetiole in dorsal view. **A, C.** *M. sinensis*; **B, D.** *M. gaoligongensis*.

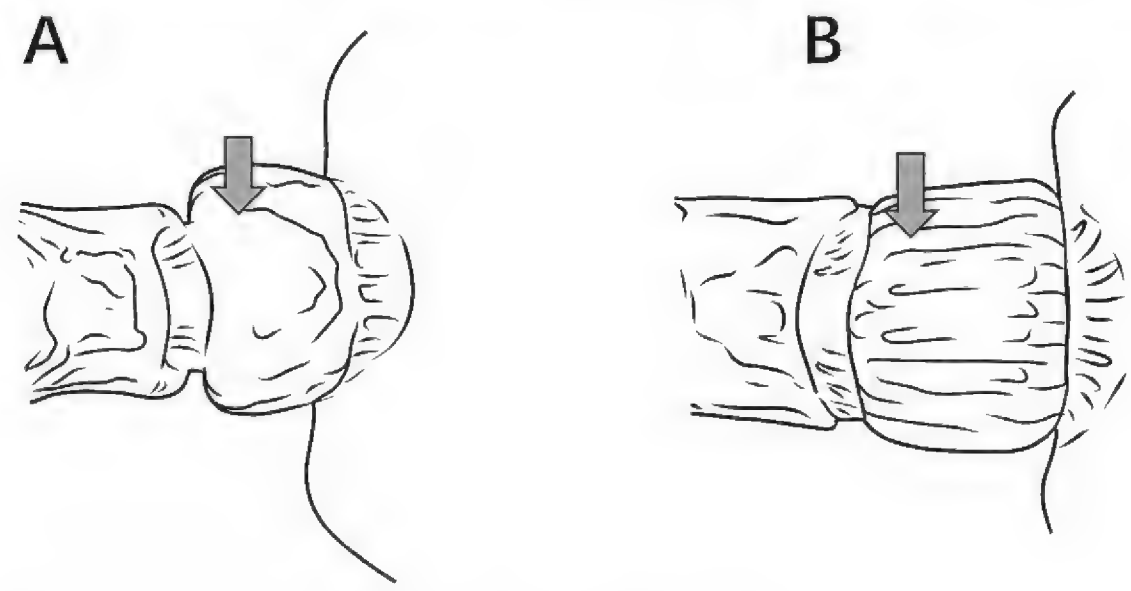


**Figure 23.** Postpetiole in dorsal view. **A.** *M. graminicola*; **B.** *M. gaoligongensis*.

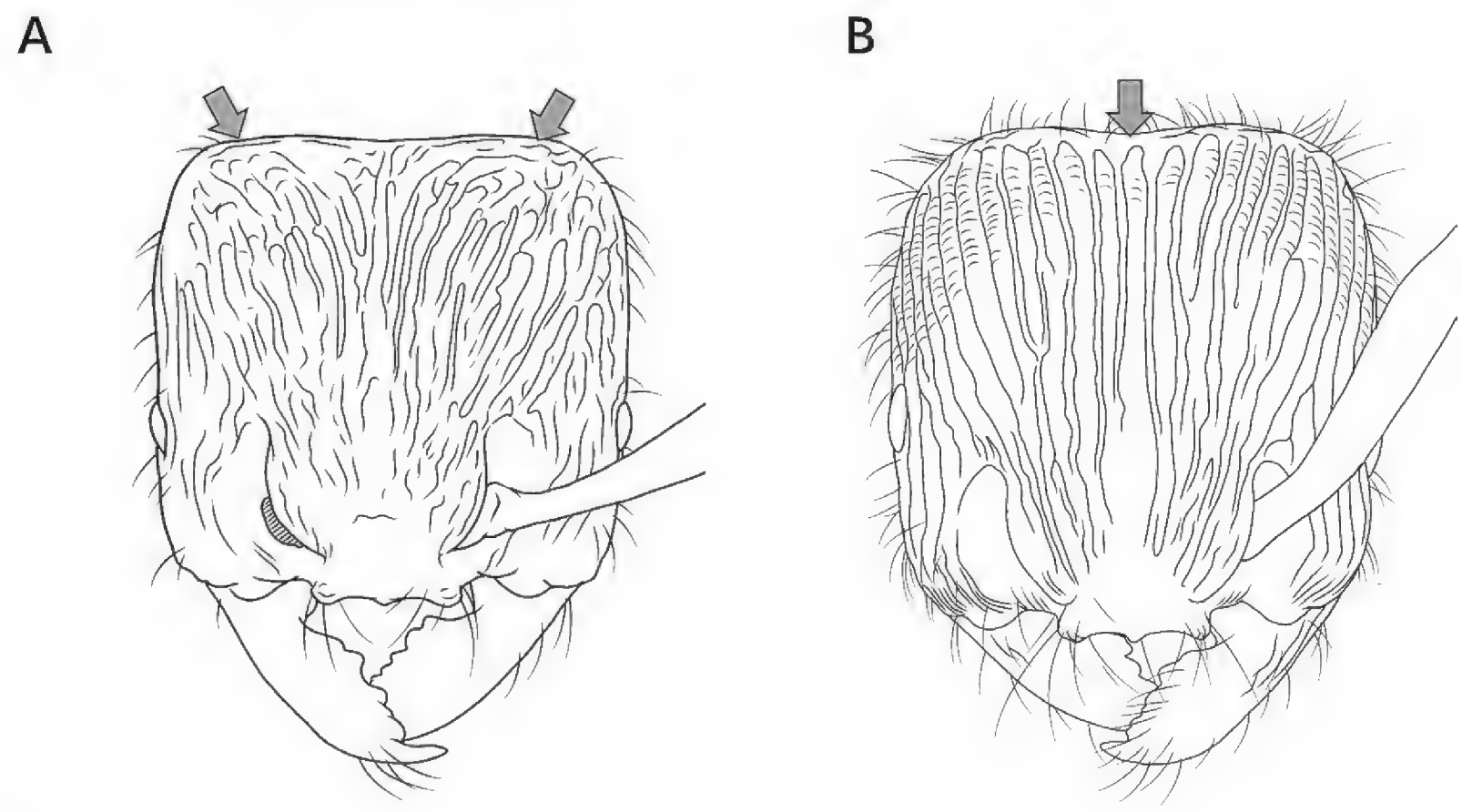


**Figure 24.** Head in full-face view. **A.** *M. pierceae*; **B.** *M. asiatica*.

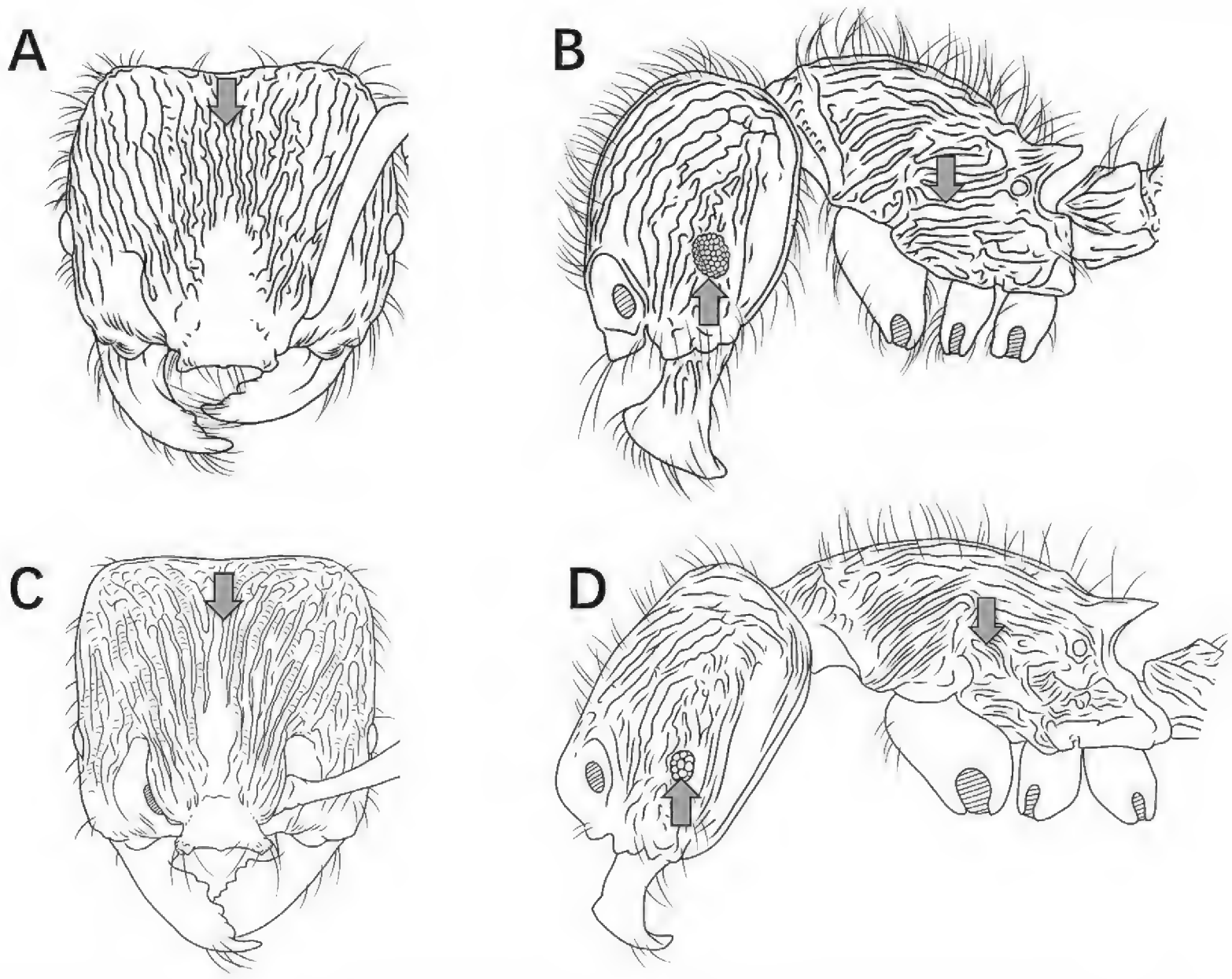


**Figure 25.** Head in full-face view and body in lateral view. **A, B.** *M. hirsuta* Gu & Chen, sp. nov.; **C, D.** *M. pierceae*.

26 Head in full-face view with dense puncta and weak longitudinal rugae (Fig. 26A); ventrolateral area of head strongly punctate (Fig. 26C) ..... *M. gaoligongensis*

– Head in full-face view with longitudinal straight striae or rugae (Fig. 26B); ventrolateral portion of head with slight longitudinal rugae and weak puncta or smooth (Fig. 26D) ..... 27

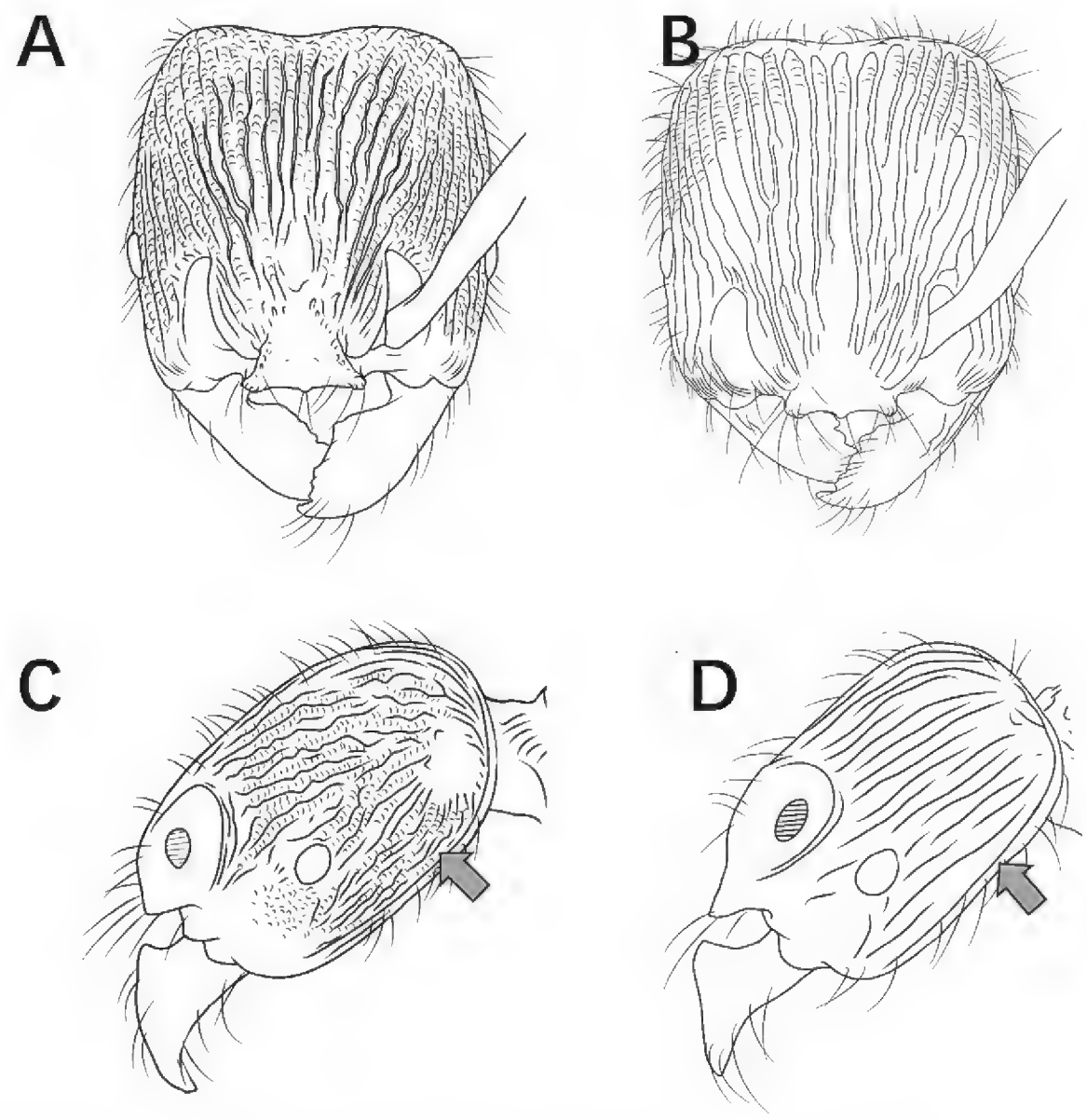


**Figure 26.** Head in full-face view and lateral view. **A, C.** *M. gaoligongensis*; **B, D.** *M. asiatica*.

27 Anterior margin of clypeus nearly straight (Fig. 27A); propodeal spines slender, longer than its base (Fig. 27C); small size (TL < 2.6) ..... *M. asiatica*

– Anterior margin of clypeus concave (Fig. 27B); propodeal spines distinct, shorter than its base (Fig. 27D); large size (TL > 3.5) ..... *M. strigis*

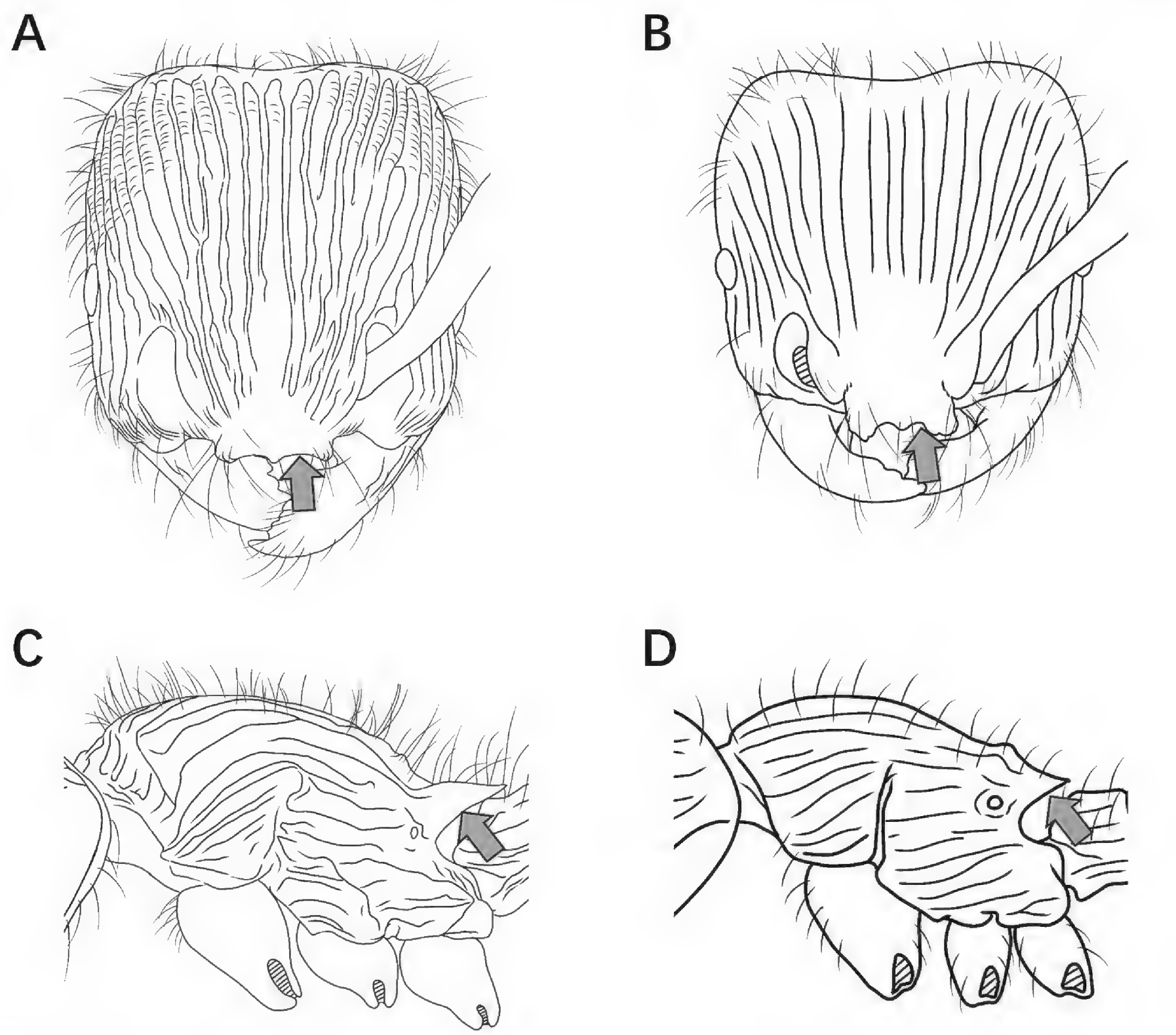


**Figure 27.** Head in full-face view and mesosoma in lateral view. **A, C.** *M. asiatica*; **B, D.** *M. strigis*.

### *Myrmecina asiatica* Okido, Ogata & Hosoishi, 2020

Fig. 28

*Myrmecina asiatica* Okido, Ogata & Hosoishsi, 2020: 17, fig. 4 (w.) CHINA.

**Material examined.** Unexamined. High-resolution images of the holotype from Okido et al. (2020) were reviewed.

**Diagnostic features.** (1) Eyes small, composed of 7–11 ommatidia; (2) mandible with a curved masticatory margin, apical tooth strong, third tooth robust, followed by 5 small teeth and a basal tooth; (3) propodeal spines triangular, variable in length, usually extending beyond (sometimes just reaching) the posterior propodeal margin; (4) petiole short, as long as or slightly longer than height in lateral view, dorsal crest positioned at middle length; (5) head and mesosoma with longitudinal rugae, sometimes interspersed with puncta.

**Distribution.** Yunnan; THAILAND, MALAYSIA, INDONESIA.

### *Myrmecina asthena* Okido, Ogata & Hosoishi, 2020

Fig. 29

*Myrmecina asthena* Okido, Ogata & Hosoishsi, 2020: 21, fig. 6 (w.) CHINA.

**Material examined.** Unexamined. High-resolution images of the holotype from Okido et al. (2020) were reviewed.

**Diagnostic features.** (1) Eyes extremely small, composed of 5–8 ommatidia; (2) head subrectangular, distinctly longer than broad (CI 86–88), with dense puncta and sometimes faint longitudinal rugae; (3) mandible with a curved masticatory margin, apical tooth strong, third tooth robust, followed by 5 small teeth and a basal tooth; (4) propodeal spines triangular, usually extending beyond posterior propodeal margin; (5) petiole distinctly longer than height in profile and longer than broad in dorsal view; (6) postpetiole with 4 ventral hairs.

**Distribution.** Yunnan; VIETNAM, MALAYSIA.

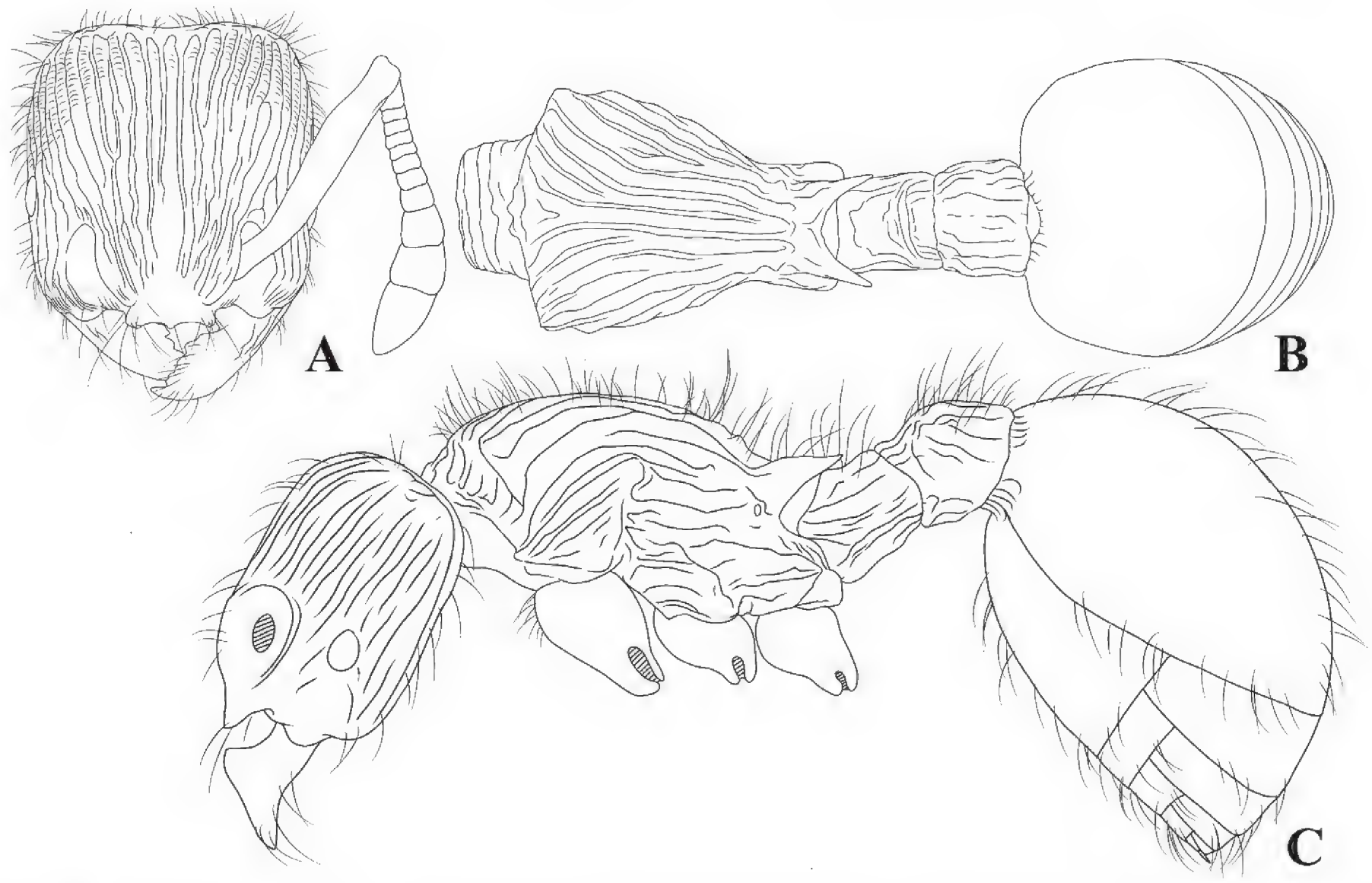


**Figure 28.** Line drawing of *Myrmecina asiatica* (redrawn after the original SEM images of Okido et al. 2020). **A.** Head in full-face view; **B.** Body in dorsal view; **C.** Body in lateral view.

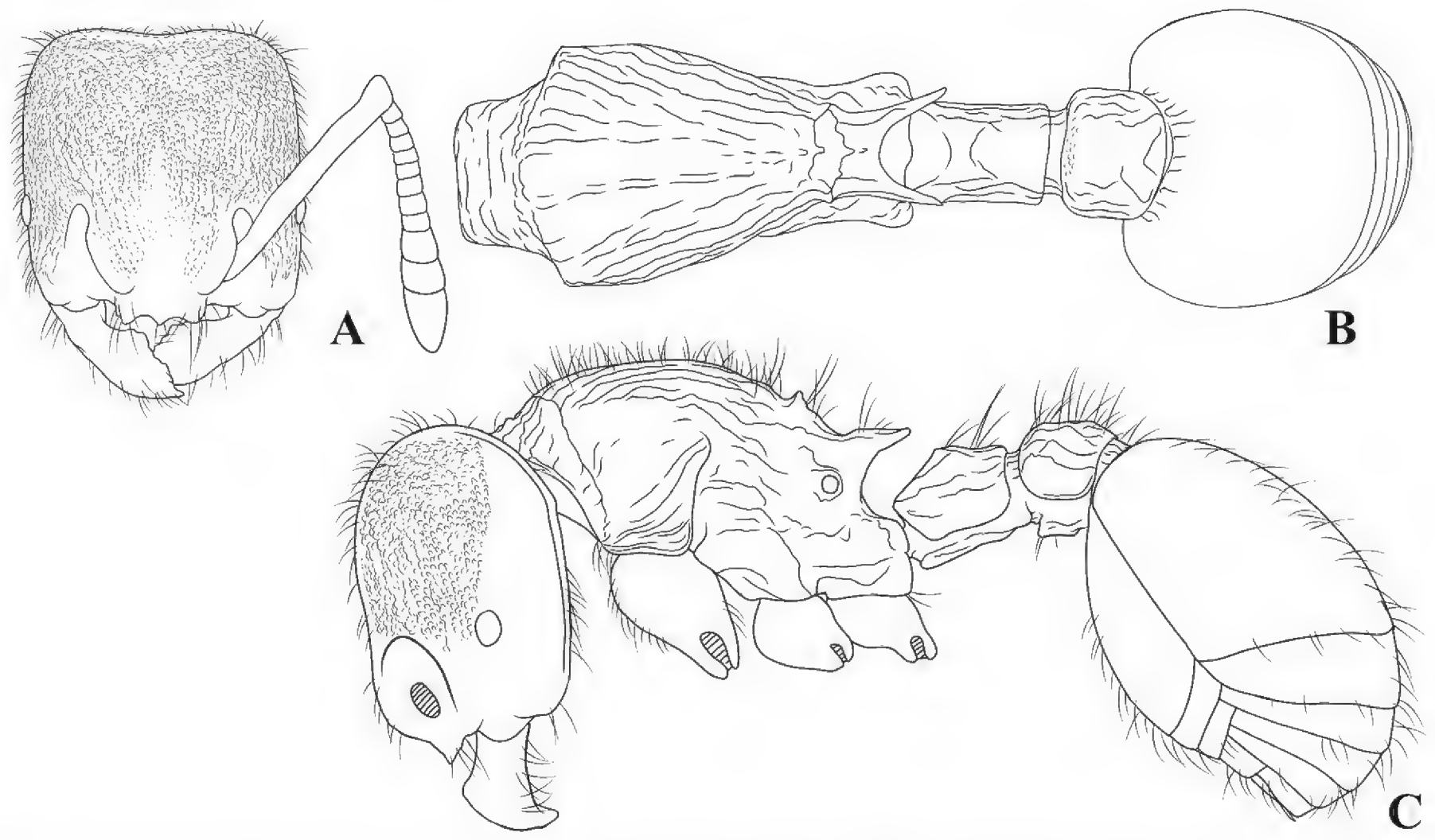


**Figure 29.** Line drawing of *Myrmecina asthena* (redrawn after the original SEM images of Okido et al. 2020). **A.** Head in full-face view; **B.** Body in dorsal view; **C.** Body in lateral view.

***Myrmecina carinolateralis* Gu & Chen, sp. nov.**

https://zoobank.org/BAF29489-B0A3-43A6-955D-0DA6222751D3

Fig. 30

**Material examined.** ***Holotype.*** • worker, Motuo, Xizang, China, 29.3201°N, 095.3401°E, 1230 m, secondary forest, soil, 27.VIII.2016, Zhilin Chen, GXNU160058 [GXNU]. ***Paratype.*** • 1 worker, with the same collection data as the holotype; • 2 workers, Motuo, Xizang, China, 29.2501°N, 095.1901°E, 840 m, secondary forest, soil, 28.VIII.2016, Zhilin Chen, GXNU160604 [2 workers, GXNU; 1 worker, IZCAS].

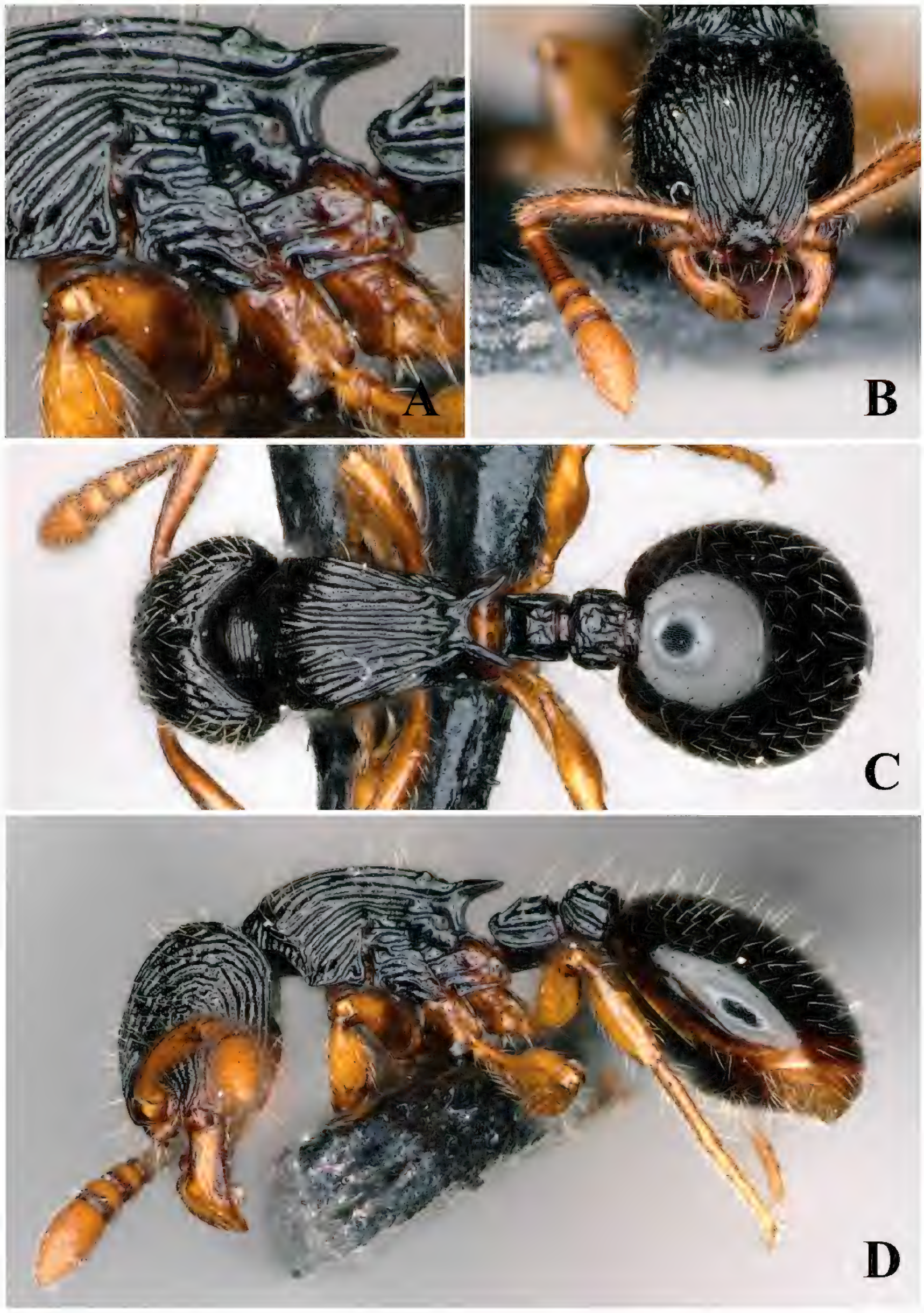


**Figure 30.** *Myrmecina carinolateralis* Gu & Chen, sp. nov. **A.** Propodeal spines in dorsal view; **B.** Head in full-face view; **C.** Body in dorsal view; **D.** Body in lateral view.

**Diagnostic features.** (1) Coarse longitudinal carinae on the lateroventral surface of head; (2) gastal tergite I with very fine reticulation (visible at 50 × magnification); (3) propodeal spines needle-like, weakly downcurved, approximately 1.5 times longer than their basal width; (4) eyes medium-sized, composed of 10–12 ommatidia; (5) body uniformly black, with yellowish-brown appendages and gastral apex;

(6) mesosomal dorsum with abundant longitudinal carinae, more rugose than in related species.

**Notes.** *M. carinolateralis* Gu & Chen, sp. nov. is characterized by its coarsely carinate lateroventral surface of head and finely reticulated gaster, key diagnostic features distinguishing it from closely related taxa. It most closely resembles *M. curvispina* but can be separated by the following combination of characters: (1) *M. carinolateralis* Gu & Chen, sp. nov. possesses coarse longitudinal carinae on the lateroventral portion and rugose dorsal carinae, contrasting with *M. curvispina*'s completely smooth lateroventral surface and uniformly striate dorsum; (2) the gaster of *M. carinolateralis* Gu & Chen, sp. nov. exhibits very fine reticulations (visible at 50 × magnification), while that of *M. curvispina* is entirely smooth; (3) Propodeal spines in *M. carinolateralis* Gu & Chen, sp. nov. are needle-like, weakly downcurved, approximately 1.5 times longer than their basal width, whereas in *M. curvispina* are broadly triangular, strongly outcurved, and approximately equal length and width; (4) eyes in *M. carinolateralis* Gu & Chen, sp. nov. are medium-sized (10–12 ommatidia), compared to reduced eyes (< 10 ommatidia) of *M. curvispina*. These consistent morphological differences separate the two species.

**Worker measurements.** (N = 4). HL 0.58–0.63, HW 0.56–0.60, CI 95–97, SL 0.44–0.46, SI 77–79, ED 0.06–0.07, MSL 0.66–0.70, PW 0.41–0.44, PL 0.16–0.18, PH 0.17–0.19, DPW 0.17–0.19, LPI 105–106, DPI 100–101, GL 0.71–0.79, TL 2.69–2.75.

**Worker description.** ***Head.*** In full-face view, head subquadrate, with weakly convex lateral margins and medially a shallow concave posterior margin. Mandibles with 7 teeth: apical two robust, teeth 3–6 small and indistinct, basal tooth smaller than apical tooth but more distinct than intermediate teeth; masticatory margin approximately equal in length to inner margin. Clypeus with nearly straight anterior margin, distinct lateral corners, and a prominent median denticle. Frontal lobes broad and laterally expanded. Antennae 12-segmented, scapes extending posteriorly to reach posterolateral corners of head. Eyes medium-sized, composed of 10–12 ommatidia. ***Mesosoma.*** In lateral view, dorsal outline evenly convex; eumetanotal spines (*sensu* Okido et al. 2020) blunt, not interrupting dorsal profile. Propodeal spines robust and elongate, approximately 1.5 times longer than their basal width, weakly downcurved and directed posteriorly. Propodeal spiracle small, diameter about one-third its distance to propodeal declivity. In dorsal view, anterior margin of mesosoma evenly convex, with distinct humeral corners; lateral margins gradually converging posteriorly toward bases of propodeal spines. Propodeal spines needle-like, weakly curved, directed posterolaterally. ***Metasoma.*** In lateral view, petiole slightly higher than long, with triangular dorsal projection; ventral margin straight. Postpetiole dorsally weakly concave, with distinct anterodorsal corner; gaster ovoid. In dorsal view, petiole with concave anterior margin and straight lateral and posterior margins; postpetiole with distinct anterodorsal and posterodorsal corners; gaster with rounded anterolateral corners. ***Sculpture.*** Mandibles with two basal longitudinal grooves on frontal surface, otherwise smooth and shining. Clypeus smooth and shining. Head in full-face and lateral views with coarse longitudinal carinae, some extending across frontal lobes surfaces. Mesosoma with abundant longitudinal carinae laterally and dorsally. Petiole and postpetiole with short longitudinal carinae laterally, dorsal carinae somewhat rugose; gaster with microreticulations. ***Pilosity and pubescence.*** Body with moderately dense erect hairs. Pubescence sparse, restricted to antennal club. ***Coloration.*** Mandibles, anterior clypeal margin, antennae, legs, and posterior gastral segments yellowish-brown to reddish-brown; remainder of body black.

**Etymology.** The specific epithet "*carinolateralis*" is a compound Latin adjective, derived from "*carina*" (meaning "keel" or "ridge") and "*lateralis*" (meaning "lateral"), referring to the diagnostic character of coarse longitudinal carinae on the lateroventral portion of the head capsule. The name highlights this distinctive sculptural feature that distinguishes this new species from *M. curvispina*.

**Distribution.** Xizang.

### *Myrmecina curvispina* Zhou, Huang & Ma, 2008

Fig. 31

*Myrmecina curvispina* Zhou, Huang & Ma, 2008: 286, figs 1–3 (w.) CHINA.

**Material examined.** ***Holotype.*** • worker, Maoershan, Guangxi, China, 25.9001°N, 110.5001°E, 1550 m, secondary forest, leaf litter, 22.VIII.1998, Shanyi Zhou.

**Diagnostic features.** (1) Propodeal spines distinctly outcurved apically in dorsal view; (2) gastral tergite I completely smooth and shining; (3) anteroventral pronotal angle acute and rectangular, projecting forward; (4) eyes small, composed of fewer than 10 ommatidia; (5) head square-shaped (CI 103), with strongly developed occipital carina and concave posterior margin; (6) mandibles massive, masticatory margin with two prominent apical teeth followed by small blunt denticles; (7) mesosomal dorsum less convex than in related species, gradually tapering posteriorly; (8) petiole quadrangular, with distinct cross ridge, subpetiolar process small and triangular; (9) head and mesosoma strongly longitudinally striate.

**Distribution.** Guangxi.

### *Myrmecina eowilsoni* Liu, 2022

Fig. 32

*Myrmecina eowilsoni* Liu, 2022: 156, fig. 3 (w.) CHINA.

**Material examined.** Unexamined. High-resolution images of the holotype from Liu et al. (2022) were reviewed.

**Diagnostic features.** (1) Postpetiole strongly expanded laterally, more than twice as broad as petiole; (2) lateral

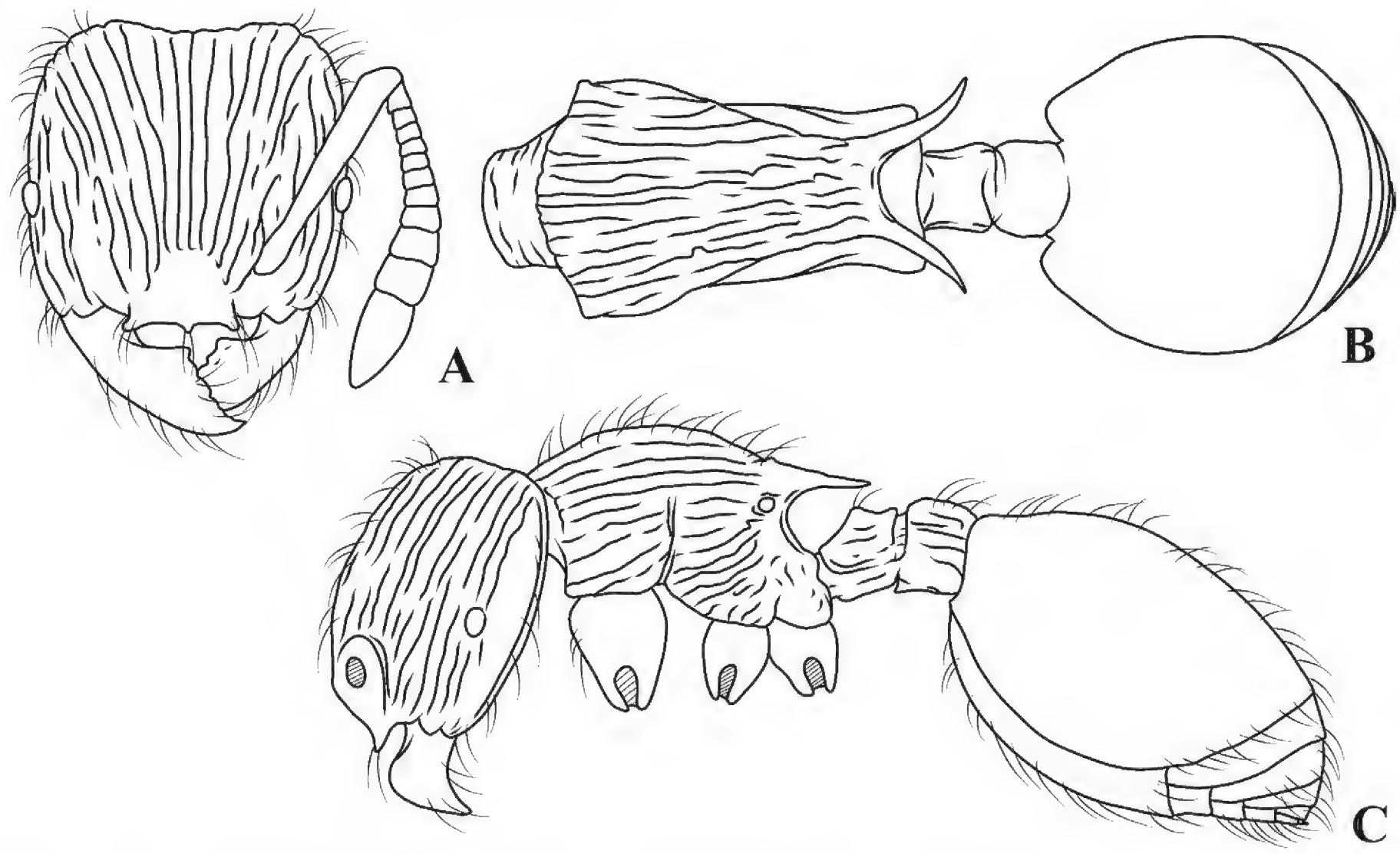


**Figure 31.** Line drawing of *Myrmecina curvispina* (redrawn after the original line drawing of Zhou et al. 2008). **A.** Head in full-face view; **B.** Body in dorsal view; **C.** Body in lateral view.

**Figure 32.** *Myrmecina eowilsoni*, holotype worker (MCZ-ENT00763515, Liu et al. 2022). **A.** Body in lateral view; **B.** Head in full-face view; **C.** Body in dorsal view.

portions of clypeus raised into sharp ridges (shield-like) in front of antennal torulus; (3) propodeal spines straight in dorsal view; (4) gastral tergite I smooth and shining; (6) ventrolateral portion of head with puncta or rugae; (7) anterior clypeal margin with a median denticle; (8) eyes small, composed of ≤ 10 ommatidia.

**Distribution.** Yunnan.

### *Myrmecina flavipeda* Gu & Chen, sp. nov.

https://zoobank.org/440F8E4A-034E-4D37-8AA5-00EC5A01D4B3

Fig. 33

**Material examined.** ***Holotype.*** • worker, Maoershan, Guangxi, China, 25.9153°N, 110.4661°E, 1550 m, secondary forest, leaf litter, 12.VII.2020, Chunxuan Luo, GXNU20002732 [GXNU]. ***Paratypes.*** • 4 workers and 1 queen, with the same collection date as holotype; • 2 workers, Huangzhushan, Guangdong, China, 24.6990°N, 114.1809°E, 497 m, secondary forest, soil, 25.VII.2022, Benan Zhang, GXNU2201299; • 5 workers, Maoershan, Guangxi, China, 25.9153°N, 110.4472°E, 1700 m, secondary forest, leaf litter, 12.VIII.2020, Danni Chen, GXNU20003038; • 3 workers, Tianjingshan, Guangdong, China, 24.6791°N, 112.9868°E, 653 m, secondary forest, soil, 19.VIII.2023, Yanping Wu, GXNU2302412 [13 workers and 1 queen, GXNU; 1 worker, IZCAS].

**Diagnostic features.** (1) Mesosoma with a pair of blunt-tipped dentiform eumetanotal spines; (2) propodeal spines robust, length subequal to its basal width, interspinal distance approximately twice spine length; (3) propodeal spiracle diameter distinctly greater than its distance to propodeal declivity; (4) petiole in dorsal view slightly longer than height, dorsal outline triangular.

**Notes.** *M. flavipeda* Gu & Chen, sp. nov. is most similar to *M. flava* but can be readily distinguished by the following characters: (1) eumetanotal spines bluntly denticulate in *M. flavipeda* Gu & Chen, sp. nov. (vs. small right-angled triangular teeth in *M. flava*); (2) propodeal spines robust, with length subequal to its basal width in *M. flavipeda* Gu & Chen, sp. nov. (vs. triangular spines longer than broad in *M. flava*); (3) *M. flavipeda* Gu & Chen, sp. nov. exhibits fine longitudinal striae mixed with puncta on the dorsum of head (vs. 11–13 inconspicuous longitudinal rugae in *M. flava*); (4) eyes smaller in *M. flavipeda* Gu & Chen, sp. nov., composed of 4–6 ommatidia (vs. 10–12 in *M. flava*); (5) propodeal spiracle large, its diameter greater than its distance to propodeal declivity in *M. flavipeda* Gu & Chen, sp. nov. (vs. spiracle small, its diameter only equal to its distance to propodeal declivity in *M. flava*); (6) petiole with triangular dorsal outline in *M. flavipeda* Gu & Chen, sp. nov. (vs. subtriangular in *M. flava*).

**Worker measurements.** (N = 5). HL 0.57–0.61, HW 0.55–0.60, CI 96–98, SL 0.46–0.50, SI 84–86, ED 0.05–0.06, MSL 0.70–0.74, PW 0.38–0.40, PL 0.17–0.19, PH 0.15–0.16, DPW 0.17–0.18, LPI 84–86, DPI 95–100, GL 1.01–1.13, TL 2.69–2.75.

**Worker description.** ***Head.*** In full-face view, head rectangular, longer than broad; lateral margins nearly straight, posterior margin broadly and shallowly concave. Mandibles with 7–8 teeth: apical two teeth robust, teeth 3–6 reduced to inconspicuous denticles, with a distinct gap between teeth 2 and 3, sub-basal tooth slightly larger than basal tooth. Clypeus with nearly straight anterior margin, lateral teeth and median clypeal denticle indistinct. Antennal fossa bordered anteriorly by a carinate ridge, continuous with lateral clypeal ridge. Frontal lobes broad and flat, not laterally expanded. Antennae 12-segmented, scapes when extending posteriorly, their apices just reaching posterior margin of head. Eyes small, composed of 4–6 ommatidia. ***Mesosoma.*** In lateral view, dorsal outline evenly convex; eumetanotal spines bluntly denticulate. Propodeal spines robust, length subequal to their basal width; propodeal spiracle large, its diameter distinctly greater than its distance to propodeal declivity. In dorsal view, pronotum convex anteriorly, with distinct humeral corners; lateral margins gradually converging posteriorly. Two transverse carinae present between eumetanotal spines; propodeal spines approximately half as long as inter-spinal distance. ***Metasoma.*** In lateral view, petiole slightly longer than its height, dorsal margin triangular, subpetiolar process small tooth, ventral margin concave medially; postpetiole higher than long, with rounded anterodorsal corners; dorsal surface weakly concave; sternite rectangular, anteroventral and posteroventral corners angulate; gaster elongate-ovoid. In dorsal view, petiole and postpetiole rectangular, postpetiole broader than length; gaster ovoid, with straight anterior margin and weakly angular anterolateral corners. ***Sculpture.*** Mandibles, clypeus, and median frons smooth and shining; remainder dorsum of head with fine longitudinal striae interspersed with puncta, appearing dull. Lateroventral portion of head with minute puncta (sometimes nearly imperceptible), weakly shining. Pronotal dorsum with short, obliquely ascending striae; sometimes anteroventral area smooth and shining. Mesopleura and lateral propodeum with longitudinal striae. In dorsal view, mesosomal dorsum with 10–15 longitudinal striae. Petiole and postpetiole striate; gaster smooth and shining. ***Pilosity and pubescence.*** Subdecumbent hairs present along lateral head margins and antennal scapes. Body densely covered with erect hairs. Pubescence restricted to antennal club. ***Coloration.*** Head, mesosomal dorsum, petiole, postpetiole, and gastral tergite I (excluding anterior and posterior margins) reddish-brown to dark brown. Antennal club, legs, lateral mesosoma, lateral gaster, and gastral apex yellow to yellowish-brown.

**Etymology.** The specific epithet "*flavipeda*" is a Latin compound adjective meaning "yellow-footed" (*flavus*, yellow + *pes/pedis*, foot), referring to the species' distinctive reddish-brown to yellowish legs, which is one of the key diagnostic traits that contrasts with the predominantly dark appendages of other congeners, and the etymology merely defines a category of characters.

**Distribution.** Guangxi, Guangdong.

**Figure 33.** *Myrmecina flavipeda* Gu & Chen, sp. nov. **A.** Head in full-face view; **B.** Petiole and postpetiole in dorsal view; **C.** Body in dorsal view; **D.** Body in lateral view.

### *Myrmecina gaoligongensis* Liu, 2022

Fig. 34

*Myrmecina gaoligongensis* Liu, 2022: 158, fig. 4 (w.) CHINA.

**Material examined.** Unexamined. High-resolution images of the holotype from Liu et al. (2022) were reviewed.

**Diagnostic features.** (1) Propodeal spines triangular, shorter than their basal width; (2) petiole subrectangular (1.5 × longer than its width); (3) postpetiole quadratic (PPI 100–103); (4) head densely punctate, with weak longitudinal rugae; (5) eyes small (6 ommatidia).

**Distribution.** Yunnan.

### *Myrmecina globicephala* Gu & Chen, sp. nov.

https://zoobank.org/DA10C220-633D-4584-B055-3523A596752C

Fig. 35

**Material examined.** ***Holotype.*** • worker, Jiuwanshan, Guangxi, China, 25.2021°N, 108.6817°E, 1206 m, secondary forest, leaf litter, 22.VII.2023, Zhuojian Gu, GXNU2300350 [GXNU].

**Diagnostic features.** (1) Head outline rounded in full-face view (unique among Chinese congeners); (2) ventrolateral portion of head smooth and shining; (3) propodeal dorsum without eumetanotal spines; (4) the lateral and dorsal surfaces of mesosoma with irregular, coarse rugoreticulae.

**Notes.** Comparing to other *Myrmecina* species, *M. globicephala* Gu & Chen, sp. nov. head shape similar to *M. breviata* and *M. dolichothrix* from Philippine. Head with broad, shallow longitudinal rugae and sparse piligerous puncta in *M. globicephala* Gu & Chen, sp. nov. (vs. head without striae in *M. breviata*); Mesosomal dorsum with waved rugae in *M. globicephala* Gu & Chen, sp. nov. (vs. with transverse striae in *M. dolichothrix*).

**Worker measurements.** (N = 1). HL 0.75, HW 0.82, CI 109, SL 0.65, SI 80, ED 0.11, MSL 0.89, PW 0.50, PL 0.21, PH 0.14, DPW 0.20, LPI 66, DPI 97, GL 0.83, TL 3.29.

**Worker description.** ***Head.*** In full-face view, head subcircular, broader than long, with evenly convex lateral and posterior margins, posterior corners broadly rounded. Mandibles with 7 teeth: apical tooth broad, teeth 2–5 subequal in size, sub-basal tooth stout and blunt, basal tooth inconspicuous. Clypeus projecting anteriorly, anterior margin arcuately emarginate, with stout lateral teeth and a single small median

**Figure 34.** *Myrmecina gaoligongensis*, holotype worker (MCZ-ENT00759990, Liu et al. 2022). **A.** Body in lateral view; **B.** Head in full-face view; **C.** Body in dorsal view.

**Figure 35.** *Myrmecina globicephala* Gu & Chen, sp. nov. **A.** Mesosoma in dorsal view; **B.** Head in full-face view; **C.** Body in dorsal view; **D.** Body in lateral view.

denticle. Frontal lobes broad and flat, not expanded laterally, diverging posteriorly. Antennae 12-segmented, scapes long, extending beyond posterior margin of head. Eyes relatively well-developed, composed of 20–22 ommatidia. ***Mesosoma.*** In lateral view, dorsal outline evenly arched; eumetanotal spines absent. Propodeal spines robust and elongate, approximately 1.2 times longer than their basal width, weakly upturned apically. Propodeal spiracle small, slit-shaped, positioned far from propodeal declivity (distance to declivity > 8 times spiracle diameter). In dorsal view, pronotum convex

anteriorly, with prominent humeral corners; lateral margins gradually converging posteriorly. Propodeal spines stout and straight, directed posteriorly and slightly laterally; propodeal spines length half of the distance between their apices; the distance of inter-spinal slightly wider than petiole. ***Metasoma.*** In lateral view, petiole higher than long, with a prominent median denticulate projection dorsally; ventral margin flat. Postpetiole dorsally convex, lacking anterodorsal corner; ventral margin shallowly concave anteriorly. In dorsal view, postpetiole approximately 1.2 times wider than long, anterolateral corners broadly rounded (not angular); gaster lacking humeral corners. ***Sculpture.*** Head with broad, shallow longitudinal rugae and sparse piligerous puncta, shining; ventrolateral portion of head smooth and shining. Antennal scapes smooth and shining, except for piligerous puncta. Mesosoma with coarse rugoreticulate sculpture dorsally and laterally. Petiole laterally carinate, dorsally with faint rugae; postpetiole dorsally with shallow wrinkles. Gaster smooth and shining. ***Pilosity and pubescence.*** Body densely covered with erect hairs; pubescence absents, except on apical three antennal segments. ***Coloration.*** Body black, except for reddish-brown anterior head margin and posterior margins of gastral segments; antennae and legs reddish-brown, except for antennal club and tarsi yellowish-brown.

**Etymology.** The specific epithet "*globicephala*" is a compound Latinized adjective derived from the Greek roots "globo-" (γλοβός, globós, "sphere, ball") and "-cephala" (κεφαλή, kephalḗ, "head"), meaning "globular-headed" or "spherical-headed." The name refers to the species' distinctive rounded head shape, which is a key diagnostic character distinguishing it from related *Myrmecina* taxa.

**Distribution.** Guangxi.

## *Myrmecina graminicola* (Latreille, 1802)

Fig. 36

*Formica graminicola* Latreille, 1802: 255 (w.q.m.) DENMARK.

*Myrmecina latreillii* Curtis, 1829: 265 (m.) GREAT BRITAIN. Curtis 1854: 219 (q.). Junior synonym of *graminicola*: Mayr 1855: 421.

*Myrmica striatula* Nylander, 1849: 40 (w.) RUSSIA. Subspecies of *graminicola*: Emery 1898: 131. Junior synonym of *graminicola*: Mayr 1855: 421.

*Myrmica bidens* Foerster, 1850: 50 (w.q.) GERMANY. Schenck 1852: 95 (m.). Junior synonym of *graminicola*: Mayr 1855: 421.

*Myrmecina kutteri* Forel, 1914: 1 (w.) ITALY. Subspecies of *graminicola*: Emery 1916: 171. Junior synonym of *graminicola*: Brown 1951: 106.

*Myrmecina graminicola* var. *grouvellei* Bondroit, 1918: 116, fig. 58 (w.) FRANCE. Junior synonym of *graminicola*: Müller 1923: 81.

*Myrmecina graminicola* subsp. *gotlandica* Karavaiev, 1930: 146 (w.) SWEDEN. Junior synonym of *graminicola*: Rigato 1999: 86.

*Myrmecina graminicola* subsp. *oelandica* Karavaiev, 1930: 146 (w.q.) SWEDEN. Junior synonym of *graminicola*: Rigato 1999: 86.

*Myrmecina graminicola* var. *dentata* Santschi, 1939: 77 (w.) TUNISIA. Junior synonym of *graminicola*: Rigato 1999: 86.

**Material examined.** High-resolution images of the syntype of *M. graminicola dentata* (https://www.antweb.org, CASENT0913028, photographed by Will Ericson), of the holotype of *M. graminicola gotlandica* (https://www.antweb.org/, CASENT0917028, photographed by Kate Martynova), of the syntype of *M. graminicola oelandica* (https://www.antweb.org/, CASENT0917029, photographed by Kate Martynova) were reviewed. ***Non-type.*** • 3 workers, Dadongshan, Guangdong, China, 24.9249°N, 112.7228°E, 653 m, 26.VIII.2023, Xiaoyun Liang, GXNU2302646.

**Diagnostic features.** (1) Antennal scape base dorsoventrally flattened (appearing equally wide at basal bend and apex in dorsal view, unlike the cylindrical, gradually thickening scape of related species); (2) body sculpture coarse, with pronounced rugae on head and mesosoma; (3) body color dark brown to black, typically with reddish-brown highlights on clypeus, mesosoma sides, pedicel, and gastral segments II–IV, and bright ferruginous appendages; (4) anteropropodeal processes developed into a sharp tooth in profile; and (5) longer, more erect pilosity compared to *M. melonii* (though some Greek specimens exhibit intermediate states).

**Distribution.** Guangxi, Guangdong, Zhejiang; UK, DENMARK, GERMANY, RUSSIA.

**Notes.** Unfortunately, to date, we have not been able to examine the type specimens or high-resolution images of the type of *M. graminicola*, and have only reviewed photographs of three type subspecies of workers: the specimen of *M. graminicola dentata* (https://www.antweb.org, CASENT0913028, photographed by Will Ericson), the holotype of *M. graminicola gotlandica* (https://www.antweb.org/, CASENT0917028, photographed by Kate Martynova), and *M. graminicola oelandica* (https://www.antweb.org/, CASENT0917029, photographed by Kate Martynova). All three subspecies have been synonymized under *M. graminicola* by Rigato (1999), and the high-resolution images of these specimens reveal no meaningful morphological differences, confirming they represent the same species. The morphology of specimens from our collection fully matches these specimens in morphological features, and if their original descriptions were scientifically valid—meaning they are indeed synonyms of *M. graminicola*—then the presence of *M. graminicola* (Latreille) (Guangxi, Hubei, Hunan, Sichuan, Zhejiang), and subspecies *M. graminicola sinensis* Wheeler (Guangxi, Liaoning, Zhejiang) in China is also confirmed (Guénard and Dunn 2012). We hope future comprehensive revisions of this genus by other myrmecologists will provide a more rigorous taxonomic diagnosis for *M. graminicola*.

## *Myrmecina guangxiensis* Zhou, 2001

Fig. 37

*Myrmecina guangxiensis* Zhou, 2001: 139, 237, figs 275, 276 (w.) CHINA.

**Material examined.** ***Holotype.*** • worker, Huashuichong, Guangxi, China, secondary forest, leaf litter, 01.IX.1998, Shanyi Zhou. ***Paratypes.*** • 4 workers, Dapingshan, Guangxi, China, 18.IX.1998, John R Fellowes. ***Non-type.*** • 5 workers,

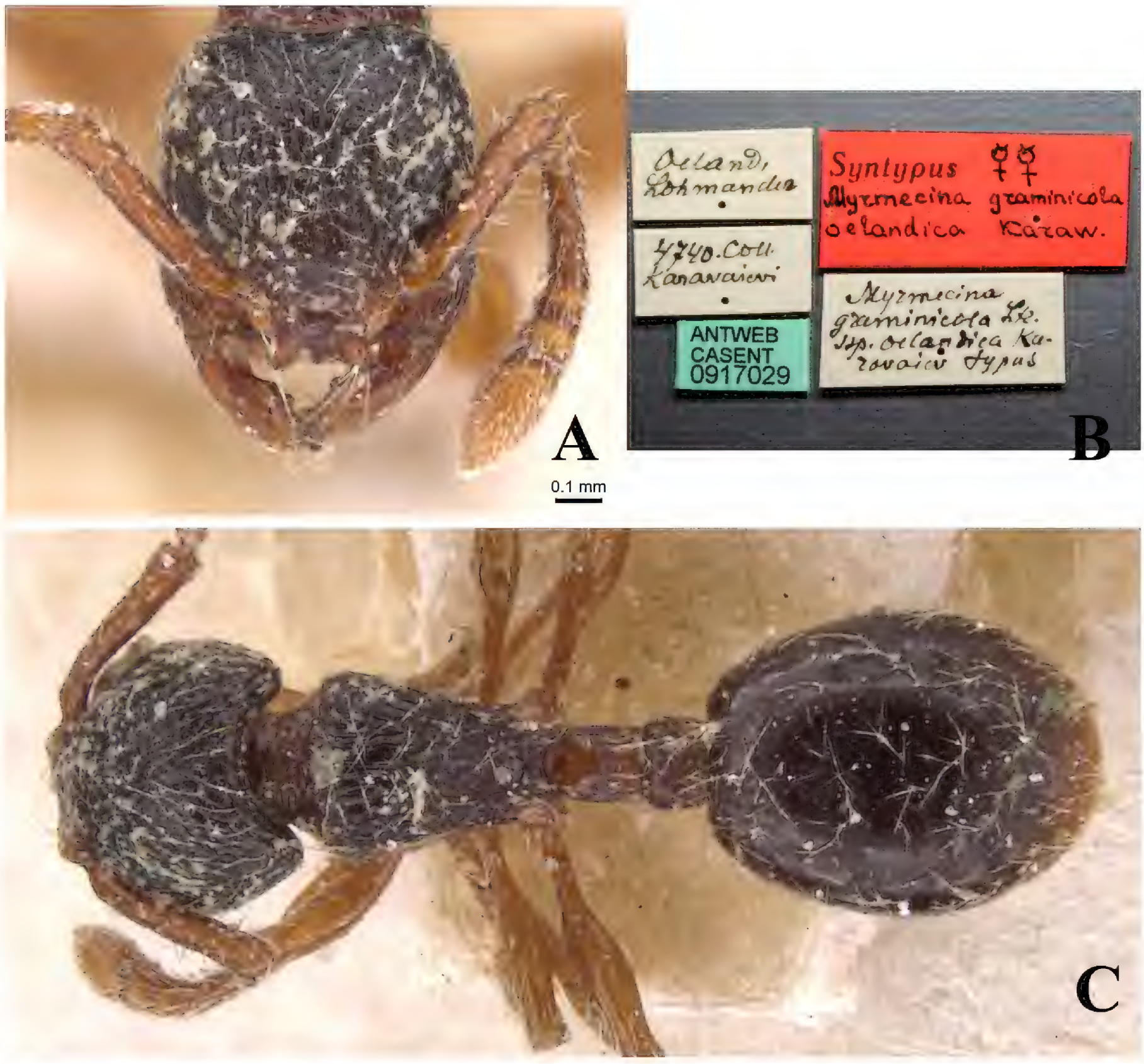


**Figure 36.** *Myrmecina graminicola dentata*, syntype worker (https://www.antweb.org, CASENT0913028, photographed by Alexandra Westrich). **A.** Head in full-face view; **B.** Label of syntype; **C.** Body in dorsal view; **D.** Body in lateral view.

**Figure 37.** *Myrmecina guangxiensis*. **A.** Head in full-face view; **B.** Petiole and postpetiole in dorsal view; **C.** Body in dorsal view; **D.** Body in lateral view.

Dayaoshan, Guangxi, China, 24.1083°N, 110.1850°E, 1173 m, 16.VIII.2021, Defu Chen, GXNU212989; •3 workers, Huapincun, Guangxi, China, 24.1083°N, 110.1850°E, 997 m, 19.VII.2021, Benann Zhang, GXNU210267.

**Diagnostic features.** (1) Head with convex sides and slightly concave occipital margin; (2) lateral margins of clypeus raised into a sharp ridge, connected with the front ridge of the antennal torulus; (3) mandibles smooth, with apical and preapical teeth plus 5–6 indistinct denticles; (4) antennal scapes short (SI 83), not reaching occipital corners; (5) eyes small, composed of 6–10 ommatidia; (6) mesosoma with anteriorly diverging rugae; propodeal spines triangular, broad-based and straight backward (not upturned); (7) petiole short, sculptured, not expanded anteriorly in dorsal view; (8) postpetiole slightly broader anteriorly, with the dorsal anterior portion smooth and shining.

**Distribution.** Guangxi, Hunan, Yunnan; VIETNAM.

### *Myrmecina hamula* Zhou, Huang, Ma, 2008

Fig. 38

*Myrmecina hamula* Zhou, Huang & Ma, 2008: 288, figs 4–6 (w.) CHINA.

**Material examined.** ***Holotype.*** • worker, Nonggang, Guangxi, CHINA 22.1833°N, 106.9833°E, 23.V.1998, secondary forest, leaf litter, John R Fellowes. ***Non-type.*** • 2 workers, Maoershan, Guangxi, China, 25.9153°N, 110.4661°E, 1973 m, 07.VIII.2020, Chunxuan Luo, GXNU202223; • 4 workers, Maoershan, Guangxi, China, 25.9154°N, 110.4662°E, 1972 m, 07.VIII.2020, Chunxuan Luo, GXNU202214; • 1 worker, Maoershan, Guangxi, China, 25.9155°N, 110.4663°E, 1967 m, 07.VIII.2020, Chunxuan Luo, GXNU202217; • 3 workers, Maoershan, Guangxi, China, 25.9156°N, 110.4664°E, 1956 m, 07.VIII.2020, Yuqing He, GXNU202304; • 7 workers, Maoershan, Guangxi, China, 25.9157°N, 110.4665°E, 1970 m, 08.VIII.2020, Danni Chen, GXNU202394; • 3 workers, Maoershan, Guangxi, 25.9158°N, 110.4666°E, 1975 m, 08.VIII.2020, Danni Chen, GXNU202396; • 5 workers, Maoershan, Guangxi, China, 25.9159°N, 110.4667°E, 1714 m, 15.VII.2019, Chunxuan Luo, GXNU192984.

**Diagnostic features.** Hooked propodeal spines (apices strongly recurved outward, forming distinct small hooks).

**Distribution.** Guangxi, Shaanxi.

### *Myrmecina hirsuta* Gu & Chen, sp. nov.

https://zoobank.org/DD9388C3-1C84-4F2D-A339-7E211B5F3C56

Fig. 39

**Material examined.** ***Holotype.*** • worker, Qiandaohu, Zhejiang, China, 30.0319°N, 119.4152°E, 550 m, secondary forest, leaf litter, 04.VII.2018, Yuhao Zhao, GXNU179961 [GXNU]. ***Paratype.*** • 1 worker, Qiandaohu, Zhejiang, China, 30.0319°N, 119.4152°E, 550 m, secondary forest, leaf litter, 10.VII.2017, Yuhao Zhao, GXNU179962; •1 worker, Qiandaohu, Zhejiang, China, 30.0319°N, 119.4152°E, 550 m, secondary forest, leaf litter, 18.VII.2017, Yuhao Zhao, GXNU179963; • 1 worker, Qiandaohu, Zhejiang, China, 30.0319°N, 119.4152°E, 550 m, secondary forest, leaf litter, 03.VIII.2017, Yuhao Zhao, GXNU179964; • 1 worker, Qiandaohu, Zhejiang, China, 30.0319°N, 119.4152°E, 550 m, secondary forest, leaf litter, 04.VII.2018, Yuhao Zhao, GXNU179965 [3 workers, GXNU; 1 worker, IZCAS].

**Diagnostic features.** (1) Eyes exceptionally large, composed of 37–40 ommatidia, exceeding the count in most congeners; (2) body with dense, long erect hairs, particularly elongated on the mesosoma.

**Notes.** *M. hirsuta* Gu & Chen, sp. nov. is characterized by its subquadrate head with weakly convex lateral margins, exceptionally large eyes composed of 37–40 ommatidia, distinctive longitudinal sinuous rugae on the head dorsum, and dense body pilosity with elongated erect hairs on the mesosoma, key diagnostic features distinguishing it from closely related taxa. It most closely resembles *M. pierceae* but can be readily distinguished by the following combination of characters: (1) the head of *M. hirsuta* Gu & Chen, sp. nov. is subquadrate (width ≈ length), with weakly convex lateral margins and a medially shallowly concave posterior margin bordered by a faint carina, while the head of *M. pierceae* is subrectangular (CI 100), with a weakly concave median occipital portion and rounded occipital corners; (2) the dorsal surface of the head in *M. hirsuta* Gu & Chen, sp. nov. bears distinctive longitudinal, sinuous rugae, whereas *M. pierceae* exhibits thin longitudinal rugae that curve toward the occipital corners; (3) the eyes of *M. hirsuta* Gu & Chen, sp. nov. are exceptionally large (37–40 ommatidia), significantly exceeding the small eyes (10 ommatidia) of *M. pierceae*; (4) the antennal scapes of *M. hirsuta* Gu & Chen, sp. nov. extend just to the posterior corners of the head in full-face view, while those of *M. pierceae* are shorter and do not reach the posterolateral corners; (5) the mesosoma of *M. hirsuta* Gu & Chen, sp. nov. features a bluntly denticulate eumetanotal spines and robust, weakly upturned propodeal spines (length subequal to their basal width), whereas *M. pierceae* has a pair of vestigial eumetanotal spine (visible as a small denticle) and short, triangular propodeal spines directed posteriorly; (6) the postpetiole of *M. hirsuta* Gu & Chen, sp. nov. is broadly U-shaped in dorsal view and lacks anterolateral corners, while in *M. pierceae* it is rectangular and with anterolateral corners; (7) the body of *M. hirsuta* Gu & Chen, sp. nov. displays dense, elongated erect hairs, particularly on the mesosoma, while the body of *M. pierceae* displays uniformly short erect pilosity. In addition, comparing to other *Myrmecina* species, *M. hirsuta* Gu & Chen, sp. nov. is similar to *M. macrops* from Malaysia. mesosomal dorsum with straight longitudinal striae in *M. hirsuta* Gu & Chen, sp. nov. (vs. mesosomal dorsum with waved longitudinal rugae in *M. macrops*) and postpetiole with longitudinal striae in *M. hirsuta* Gu & Chen, sp. nov. (vs. postpetiole without longitudinal striae in *M. macrops*).

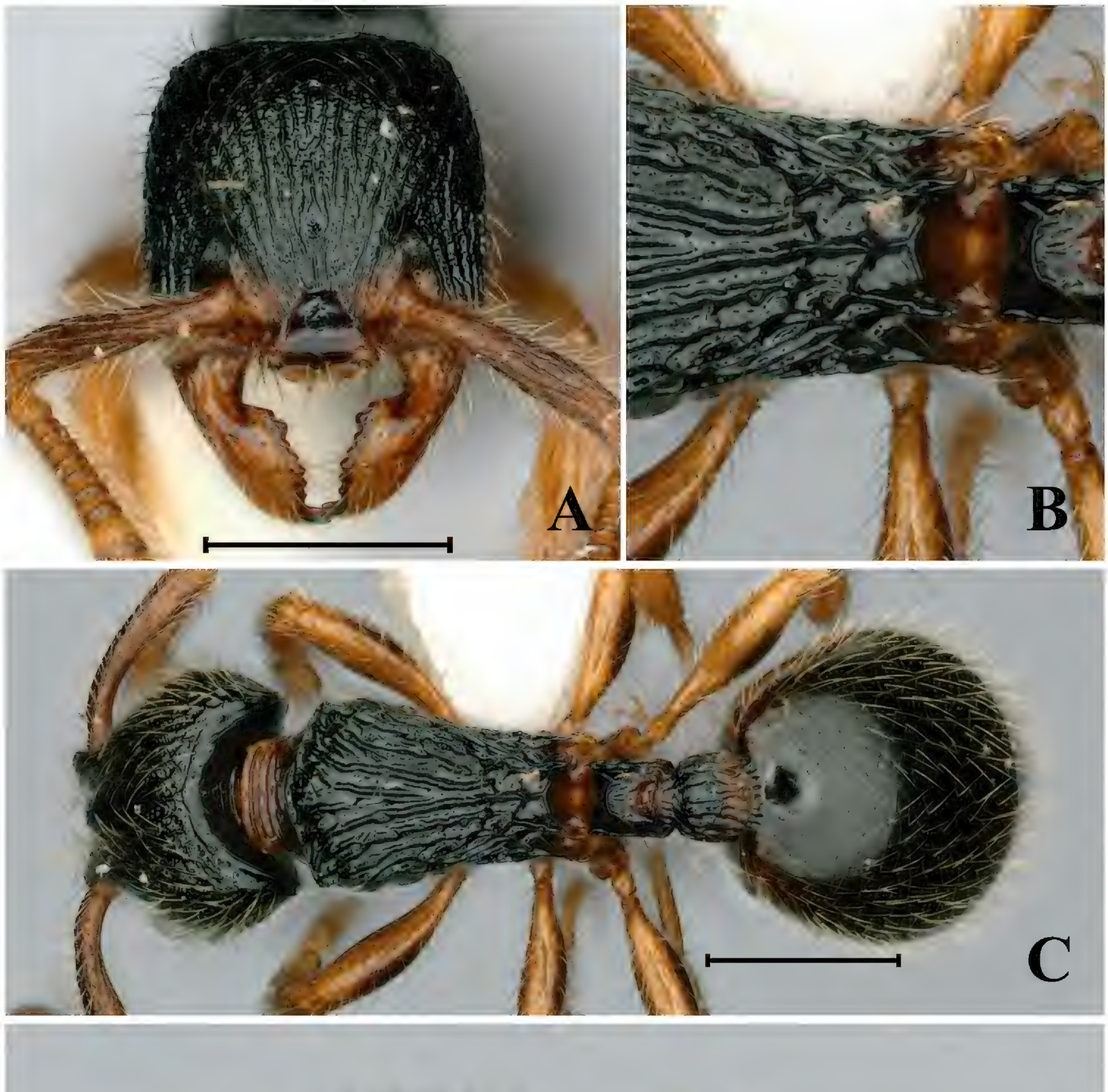


**Figure 38.** *Myrmecina hamula*. **A.** Head in full-face view; **B.** Mesosoma in dorsal view; **C.** Body in dorsal view; **D.** Body in lateral view.

**Figure 39.** *Myrmecina hirsuta* Gu & Chen, sp. nov. **A.** Clypeus and mandible in full-face view; **B.** Head in full-face view; **C.** Body in dorsal view; **D.** Body in lateral view.

**Worker measurements.** (N = 4). HL 0.78–0.83, HW 0.88–0.92, CI 107–111, SL 0.59–0.63, SI 66–68, ED 0.11–0.12, MSL 0.83–0.86 PW 0.60–0.62, PL 0.24–0.26, PH 0.25–0.27, DPW 0.23–0.25, LPI 103–106, DPI 92–96, GL 1.24–1.33, TL 3.70–3.76.

**Worker description.** ***Head.*** In full-face view, head subquadrate, slightly broader than long, with weakly convex lateral margins and nearly straight (somewhat medially shallowly concave) posterior margin. Mandibles with 6 teeth: apical and subapical teeth robust, teeth 3–5 relatively small, basal tooth broader and blunter than teeth 3 and 4. Clypeus projecting beyond anterior head margin, its anterior margin arcuately emarginate, with stout lateral teeth and a transverse median prominence (non-denticulate). Frontal lobes well-developed, flattened and laterally expanded. Antennae 12-segmented, scapes extending just to the posterior corners of head in full-face view. In lateral view, eyes well-developed, composed of 37–40 ommatidia. ***Mesosoma.*** In lateral view, mesosoma stout and short, dorsal outline convex, eumetanotal spines bluntly denticulate. Propodeal spines robust, length subequal to their basal width, weakly upturned apically. Propodeal spiracle large, positioned close to the propodeal declivity, distance to propodeal declivity equal to spiracle diameter. In dorsal view, pronotum convex anteriorly, humeral corners prominent; lateral margins gradually converging posteriorly toward the eumetanotal spines, which blunt and laterally denticulate. Propodeal spines short, directed posterolaterally, their apices slightly outwardly curved; spine length equal to 1/3 the distance between their apices. Inter-spinal distance greater than petiolar width and slightly less than postpetiolar width. ***Metasoma.*** In lateral view, petiole as long as high, with a triangular denticulate projection posterodorsally; ventral margin straight, anteroventral corner angulate. Postpetiole dorsally convex, anterior margin sloping, with a distinct anterodorsal corner; ventral margin short, anteroventral corner weakly denticulate; gaster ovoid. In dorsal view, postpetiole U-shaped, lacking anterolateral corners; gaster circular, without humeral corners. ***Sculpture.*** Mandibles smooth and shining, except for short longitudinal striae basolaterally. Head in full-face view with longitudinal, sinuous rugae, except for clypeus and medial portion between and frontal lobes smooth and shining. Lateroventral portion of head smooth and shining. Antennal scapes with longitudinal striae ventroapically, otherwise smooth and shining, except for piligerous puncta. Mesosoma laterally with oblique, posteriorly ascending carinae; dorsum with about 12 longitudinal carinae converging posteriorly (sometimes intersecting); 2–3 transverse carinae present between eumetanotal spines. Petiole and postpetiole with weaker, shorter longitudinal carinae than mesosoma. Gaster smooth and shining. ***Pilosity and pubescence.*** Body densely covered with erect long hairs, those on mesosoma longer than on head. Pubescence restricted to apical two segments of antennae. ***Coloration.*** Mandibles, antennae, and legs reddish-brown, except antennal club dark yellowish-brown. Body predominantly black, with anterior margin of head and gastral apex reddish-brown.

**Etymology.** The specific epithet "*hirsuta*" is a Latin adjective meaning "hairy" or "bristly", referring to the remarkably dense pilosity covering the body of this species, particularly notable on the dorsum of the head, mesosoma, and gaster. The name highlights one of the most distinctive diagnostic traits of this taxon compared to congeners.

**Distribution.** Zhejiang.

### *Myrmecina jiachengi* Gu & Chen, sp. nov.

https://zoobank.org/CE9CA233-B3E6-48B8-A148-253C4B1EDCE7

Fig. 40

**Material examined.** ***Holotype.*** • worker, Shifushi, Changanqu, Xian, Shaanxi, China, 34.0207°N, 108.7894°E, 5560 m, secondary forest, leaf litter, 10.VI.2019, Jiacheng Zhang, GXNU19400156 [GXNU]. ***Paratypes.*** • 5 workers, with the same collection data as the holotype [4 worker, GXNU; 1 worker, IZCAS].

**Diagnostic features.** (1) Nearly the entire head (except smooth medial frons) and mesosoma with coarse reticulation, a unique feature among Chinese *Myrmecina* (which typically exhibit longitudinal striae, rugae, or smooth surfaces); (2) anterolateral clypeal projections and arcuately concave anterior clypeal margin with a median denticle; (3) conical anterior pronotal projection and stout propodeal spines (basal width > length), directed posterodorsally with upturned apices; (4) petiole much higher than long, with steep anterior face, concave posterior face, and a distinct subpetiolar process; (5) large eyes (> 20 ommatidia).

**Notes.** *M. jiachengi* Gu & Chen, sp. nov. is unambiguously distinguished from all other Chinese *Myrmecina* species—which typically exhibit longitudinal striae, rugae, or smooth surfaces—by its unique coarse reticulations covering nearly the entire head (except the smooth medial frons) and mesosoma. The only congener sharing this reticulate sculpturing pattern, *M. dasynota*, differs markedly in multiple traits: (1) *M. jiachengi* Gu & Chen, sp. nov. possesses anterolateral clypeal projections and an arcuately concave anterior clypeal margin bearing a median denticle, contrasting with *M. dasynota*'s straight, denticle-free clypeal margin and absence of lateral projections; (2) the mesosoma of *M. jiachengi* Gu & Chen, sp. nov. features stout propodeal spines (basal width > length) directed posterodorsally with upturned apices, and a small propodeal spiracle (diameter 1/3 of distance to propodeal declivity), whereas *M. dasynota* with a slender, laterally directed spines (length > basal width), and a proportionally larger spiracle (diameter approximately 1/2 of distance to propodeal declivity); (3) the petiole of *M. jiachengi* Gu & Chen, sp. nov. much higher than long, with a steep anterior face, concave posterior face, and distinct subpetiolar process, while the petiole of *M. dasynota* is subequal in height and length, with gentle slopes and a reduced subpetiolar process; (4) the eyes of *M. jiachengi* Gu & Chen, sp. nov. larger (> 20 ommatidia), while eyes of *M. dasynota* smaller

**Figure 40.** *Myrmecina jiachengi* Gu & Chen, sp. nov. **A.** Mesosoma in dorsal view; **B.** Head in full-face view; **C.** Body in dorsal view; **D.** Body in lateral view.

(≤ 15 ommatidia). The combination of these morphological and sculptural traits provides unequivocal diagnostic separation from all regional congeners.

**Worker measurements.** (N = 5). HL 0.56–0.62, HW 0.56–0.61, CI 93–97, SL 0.45–0.47, SI 78–83, ED 0.06–0.07, MSL 0.68–0.72, PW 0.40–0.44, PL 0.16–0.18, PH 0.17–0.20, DPW 0.17–0.18, LPI 104–106, DPI 100–102, GL 0.84–0.91, TL 2.54–2.61.

**Worker description.** ***Head.*** In full-face view, head subquadrate, lateral margins nearly parallel and posterior margin arcuately concave; posterolateral corners rounded. Mandibles with 8 teeth: apical two teeth robust, teeth 3–7 small but distinct, basal tooth larger than teeth 3–7 but distinctly smaller than apical tooth, with a denticle near inner margin. Clypeus with prominent anterolateral projections and arcuately concave anterior margin bearing a median denticle. Frontal lobes strongly laterally expanded. Antennae 12-segmented, scapes reaching posterolateral corners. Eyes relatively large, composed of > 20 ommatidia. ***Mesosoma.*** In lateral view, propodeum stout, dorsum convex, eumetanotal spines inconspicuous. Propodeal spines robust, basal width greater than long, directed posterodorsally with apices slightly upturned. Propodeal spiracle small, its maximum diameter equal to 1/3 of its distance to propodeal declivity. In dorsal view, pronotum with prominent humeral corners; lateral margins nearly straight, converging posteriorly to propodeal spine bases. Propodeal spines stout, directed posterolaterally, length < 1/3 of inter-spinal distance. ***Metasoma.*** In lateral view, petiole much higher than long, with triangular dorsal projection (anterior face steep, posterior face concave); subpetiolar process distinct, ventral margin shallowly concave. Gaster ovoid in shape. In dorsal view, both petiole and postpetiole wider than long; postpetiole with rounded anterodorsal corners and obtuse posterodorsal corners. Gaster with straight anterior margin and distinct anterolateral corners. ***Sculpture.*** Mandibles with two longitudinal grooves (inner wider than outer), otherwise smooth and shining. Clypeus smooth and shining. Scapes with dense longitudinal rugae. Head with coarse reticulations except smooth and shining medial area between frontal lobes. Lateroventral area of head with faint striae, generally smooth and shining. Mesosoma with coarse reticulations, pronotal sides with partial longitudinal striae ventrally. Petiole with longitudinal rugae; gaster smooth and shining. ***Pilosity and pubescence.*** Body with moderately dense erect hairs. Pubescence limited to antennal club. ***Coloration.*** Head black; mesosoma black dorsally, reddish-brown posterolaterally. Petiole and gaster reddish-brown to black, gaster predominantly black. Mandibles, antennae and legs yellowish-brown to reddish-brown.

**Etymology.** The species epithet "*jiachengi*" is a Latinized noun in the genitive case, derived from the given name "Jiacheng" of the collector, Mr. Jiacheng Zhang. The name is proposed to honor Mr. Zhang's invaluable contribution in collecting the type series of this new species, thereby recognizing his pivotal role in its discovery.

**Distribution.** Shaanxi.

### *Myrmecina kaigong* Terayama, 2009

Fig. 41

*Myrmecina kaigong* Terayama, 2009: 188, figs 252, 253 (w.) TAIWAN.

**Material examined.** Unexamined. High-resolution images of the holotype of *M. kaigong* (http://www.niaes.affrc.go.jp/inventory/insect/inssys/hymlst.htm, HYM-206, photographed by Hiraku Yoshitake & Takashi Kurihara) were reviewed.

**Diagnostic features.** (1) 12-segmented antennae; (2) head with about 20 evenly spaced, thick straight rugae on the vertex (genal area smooth); (3) clypeal anterior margin straight, lacking a median denticle; (4) mesosomal dorsum with about 12 uniform longitudinal rugae (lacking deeper primary striae); (5) short triangular propodeal spines directed posteriorly; (6) petiole with a distinct dull mid-dorsal angle; (7) gastral tergite I completely smooth; (8) small body size (TL 2.2). It differs from similar species like *M. flavipeda* Gu & Chen, sp. nov. (which has deeper primary mesosomal striae and a clypeal denticle) and *M. taiwana* (with longer, upturned propodeal spines) by these consistent traits.

**Distribution.** Taiwan.

### *Myrmecina laevidorsa* Gu & Chen, sp. nov.

https://zoobank.org/A5BEA03F-F72A-4FC5-865A-1B045BAE7F32

Fig. 42

**Material examined.** ***Holotype.*** • worker, Maoershan, Guangxi, China, 26.8810°N, 110.4146°E, 1551 m, secondary forest, leaf litter, 09.VIII.2020, Zhilin Chen, GXNU20002688 [GXNU]. ***Paratypes.*** • 3 workers, with the same collection data as the holotype [2 worker, GXNU; 1 worker, IZCAS].

**Diagnostic features.** (1) Eyes small, composed of 4–6 ommatidia; (2) densely punctate over most of head surface except for smooth and shining medial frons, clypeus and lateroventral portions; (3) mesosomal dorsum completely smooth and shining; (4) propodeal spiracle unusually large, diameter approximately twice as its distance to propodeal declivity; (5) propodeal spines slender, posteriorly directed, length about 1/3 the distance between their apices; (6) predominantly yellowish-brown body, with dark brown posterior head and mid-gaster.

**Notes.** *M. laevidorsa* Gu & Chen, sp. nov is characterized by its completely smooth and shining mesosomal dorsum, a key diagnostic feature that distinguishes it from closely related taxa. It most closely resembles *M. breviata* but can be readily distinguished by the following combination of characters: (1) the head of *M. laevidorsa* Gu & Chen, sp. nov. is rectangular, with nearly parallel lateral margins and medially concave posterior margin, while the head of *M. breviata* is subquadrate, with convex lateral margins and straight to weakly convex posterior margin; (2) the cephalic sculpture of *M. laevidorsa* Gu & Chen, sp.

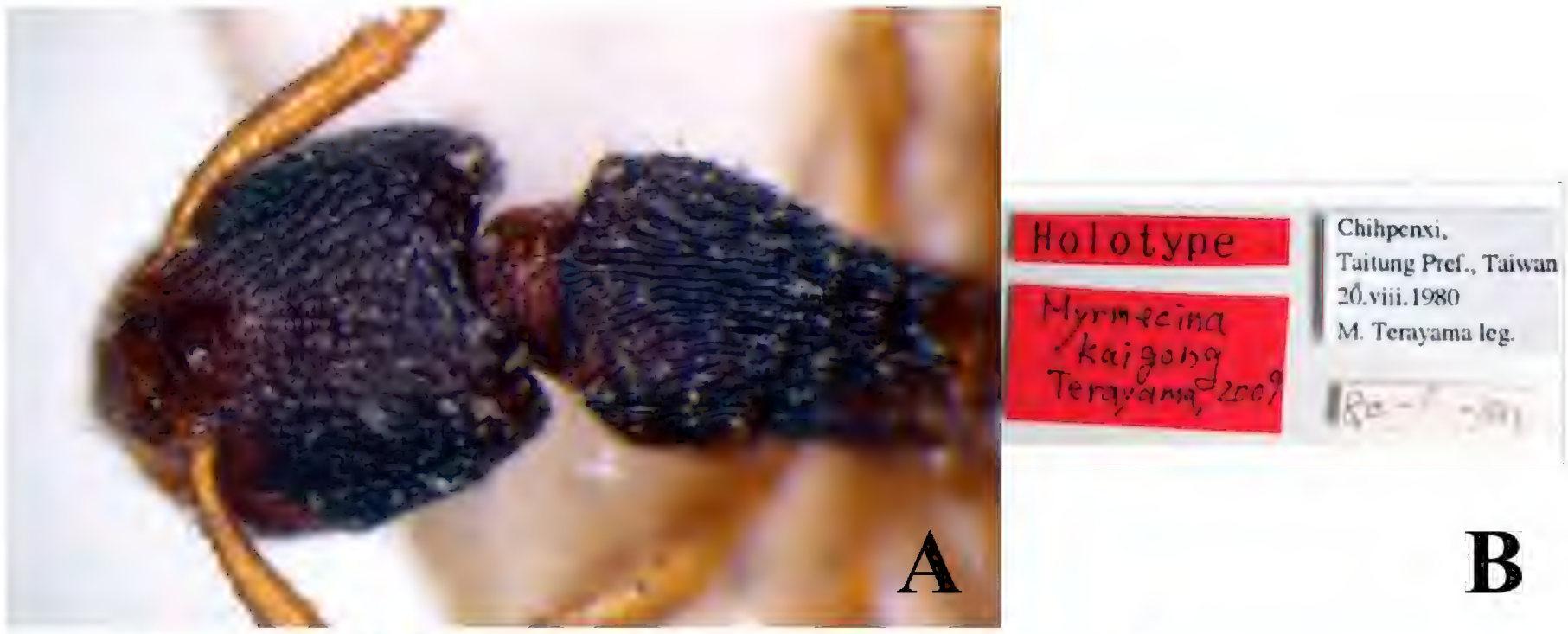


**Figure 41.** *Myrmecina kaigong*, holotype worker (http://www.niaes.affrc.go.jp/inventory/insect/inssys/hymlst.htm, HYM-206, photographed by Hiraku Yoshitake &Takashi Kurihara). **A.** Head and mesosoma in dorsal view; **B.** Label of holotype; **C.** Body in dorsal view; **D.** Body in lateral view.

**Figure 42.** *Myrmecina laevidorsa* Gu & Chen, sp. nov. **A.** Head in full-face view; **B.** Petiole in lateral view; **C.** Body in dorsal view; **D.** Body in lateral view.

nov. is densely punctate except for smooth medial frons and clypeus, whereas *M. breviata* exhibits longitudinal rugae across the entire dorsum of head; (3) the mesosomal dorsum of *M. laevidorsa* Gu & Chen, sp. nov. is smooth and shining, contrasting with *M. breviata*'s weakly carinate pronotum and mesonotum. (4) the propodeal spiracle of *M. laevidorsa* Gu & Chen, sp. nov. is exceptionally large (diameter twice its distance to declivity), compared to *M. breviata*'s smaller spiracle (diameter ≤ 1/6 × the distance); (5) the postpetiole of *M. laevidorsa* Gu & Chen, sp. nov. is rectangular, with distinct anteroventral corners, versus *M. breviata*'s more globular postpetiole with less-defined corners; (6) the eyes of *M. laevidorsa* Gu & Chen, sp. nov. extremely reduced (4–6 ommatidia) compared to *M. breviata* (typically 10–12 ommatidia).

**Worker measurements.** (N = 3). HL 0.44–0.46, HW 0.40–0.42, CI 90–93, SL 0.31–0.35, SI 76–78, ED 0.02–0.03, MSL 0.52–0.54, PW 0.27–0.29, PL 0.13–0.15, PH 0.14–0.16, DPW 0.12–0.14, LPI 106–108, DPI 92–96, GL 0.64–0.67, TL 2.08–2.12.

**Worker description.** ***Head.*** In full-face view, head distinctly rectangular, longer than broad, lateral margins nearly parallel, posterior margin medially concave, posterolateral corners rounded. Mandibular masticatory margin bearing 8–9 teeth: apical two teeth 1–2 robust, teeth 3–6 small and uniform in size, aligned on the same line as the major teeth; teeth 7–8 slightly larger than 3–6 but lower in height; basal tooth indistinct or occasionally absent. Clypeal anterior margin nearly straight, lacking a median denticle. Frontal lobes thin, subtranslucent, and slightly laterally expanded. Antennae 12-segmented, scapes barely reaching posterolateral corners of head. Eyes small, composed of 4–6 ommatidia. ***Mesosoma.*** In lateral view, dorsal outline of mesosoma weakly convex; eumetanotal spines inconspicuous. Propodeal spines slightly longer than their basal width, directed posteriorly. Propodeal spiracle large, circular, diameter twice as its distance to propodeal declivity. In dorsal view, anterior pronotal margin evenly convex, humeral corners prominent; pronotum slightly broader anteriorly than posteriorly; mesonotum abruptly constricted posteriorly. Propodeum with a transverse carina anteriorly; propodeal spines slender, directed posteriorly, length approximately 1/3 the distance between their apices. ***Metasoma.*** In lateral view, petiole slightly higher than long, dorsum with a triangular projection; ventral margin almost straight, anteroventral corner rounded. Postpetiole rectangular, anteroventral corner angulate, posteroventral corner angular; gaster ovoid. In dorsal view, petiolar dorsum carinate; postpetiole broader anteriorly, with distinct rounded anterodorsal corners; gaster with prominent anterolateral corners. ***Sculpture.*** Mandibles, clypeus, and median frons smooth and shining; remainder of head densely punctate, except lateroventral portions smooth and shining. Mesopleura with shallow puncta and weak rugae; rest of mesosoma dorsally and laterally smooth and shining. Petiole laterally with 2–3 weak carinae. Postpetiole anteriorly smooth and shining, posteriorly with longitudinal rugae; gaster entirely smooth, except for short basal striae near insertion. ***Pilosity and pubescence.*** Body densely covered with short erect hairs; pubescence absents, except on antennal club. ***Coloration.*** Body predominantly yellowish-brown; posterior head and mid-gaster dark brown. Mandibles and appendages yellow.

**Etymology.** The specific epithet "*laevidorsa*" is a Latin compound adjective derived from "*laevis*" (smooth) and "*dorsum*" (back), referring to the characteristically smooth and unsculptured dorsal surface of the mesosoma, a key diagnostic feature distinguishing this species from its congeners.

**Distribution.** Guangxi.

## *Myrmecina pauca* Huang, Huang & Zhou, 2008

Fig. 43

*Myrmecina pauca* Huang, Huang & Zhou, 2008: 275, figs 1–6 (w.q.) CHINA.

**Material examined.** ***Holotype.*** • worker, Bamianshan, Hunan, China, 26.0333°N, 113.7500°E, secondary forest, leaf litter, 1300 m, 14.VI.2004, Jianhua Huang. ***Paratypes.*** • 3 workers, from the same collection date as holotype. ***Non-type.*** • 4 workers, Dayaoshan, Guangxi, China, 24.1356°N, 110.0864°E, 624 m, secondary forest, leaf litter, 26.VI.2021, Yulin Xie, GXNU201857; • 4 workers, Maoershan, Guangxi, China, 25.8983°N, 110.4697°E, 1100 m, secondary forest, leaf litter, 16.VII.2020, Chunxuan Luo, GXNU203468; • 5 workers, Maoershan, Guangxi, China, 25.8983°N, 110.4697°E, 1100 m, secondary forest, leaf litter, 15.VII.2020, Chunxuan Luo, GXNU203356; • 3 workers, Maoershan, Guangxi, China, 25.8983°N, 110.4697°E, 1100 m, secondary forest, leaf litter, 16.VII.2020, Chunxuan Luo, GXNU203399; • 2 workers, Maoershan, Guangxi, China, 25.8983°N, 110.4697°E, 1100 m, secondary forest, leaf litter, 16.VII.2020, Chunxuan Luo, GXNU203458.

**Diagnostic features.** Antenna 11-segmented (unique among *Myrmecina* species).

**Distribution.** Guangxi, Hunan.

## *Myrmecina pierceae* Liu, 2022

Fig. 44

*Myrmecina pierceae* Liu, 2022: 160, fig. 5 (w.) CHINA.

**Material examined.** Unexamined. High-resolution images of the holotype from Liu et al. (2022) were reviewed.

**Diagnostic features.** (1) Propodeal spines triangular, shorter than their basal width, posteriorly directed; (2) petiole node subrectangular in dorsal view (1.5 × longer than width); (3) head with thin longitudinal rugae, curving toward occipital corners; ventrolateral portion smooth and shining (1–2 rugae visible laterally); (4) clypeus smooth, anterior margin concave, with median process; (5) gaster entirely smooth and shining; (6) mesosoma

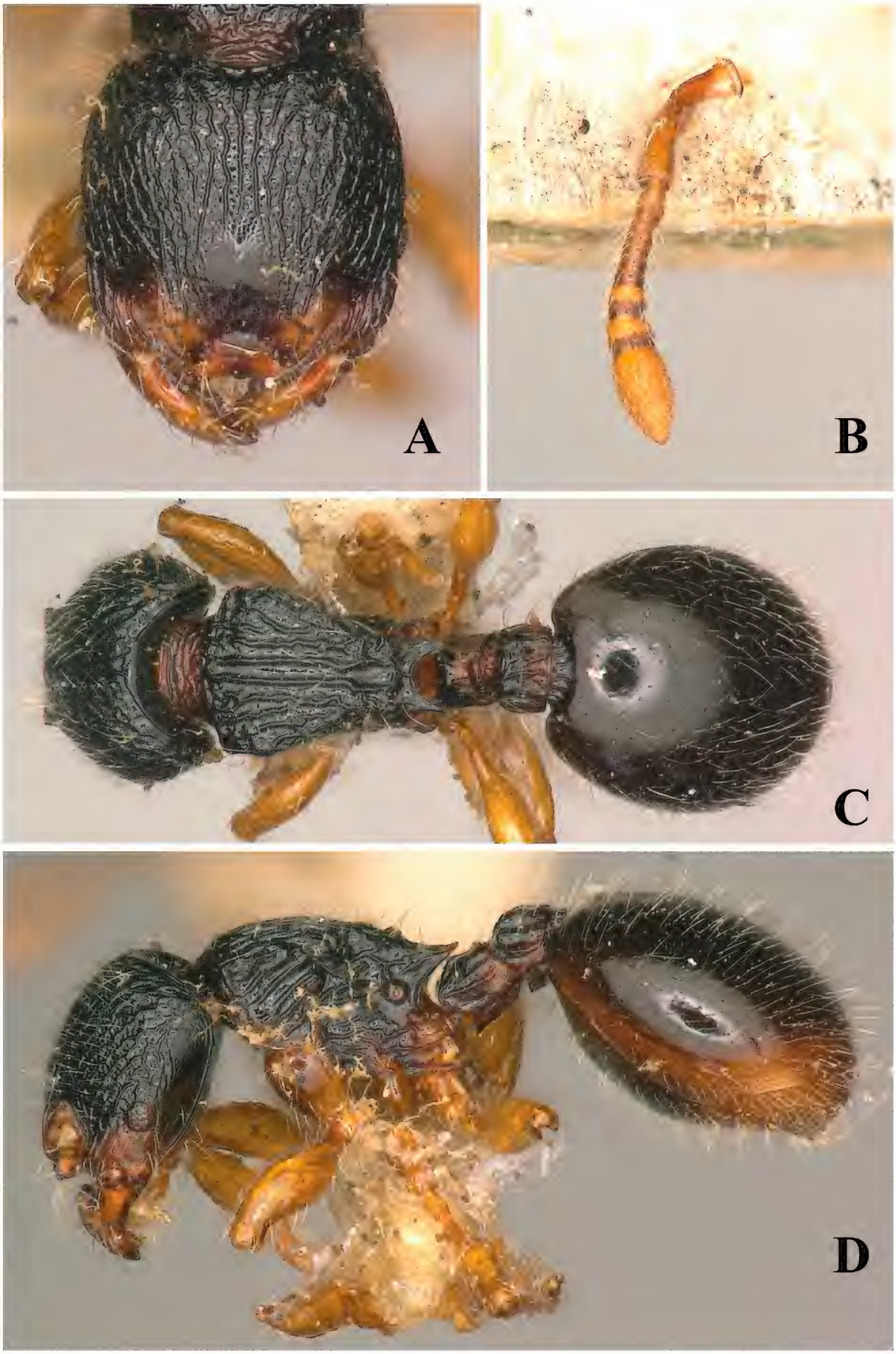


**Figure 43.** *Myrmecina pauca*. **A.** Head in full-face view; **B.** Antenna; **C.** Body in dorsal view; **D.** Body in lateral view.

**Figure 44.** *Myrmecina pierceae*, holotype worker (MCZ-ENT00759962; Liu et al. 2022). **A.** Body in lateral view; **B.** Head in full-face view; **C.** Body in dorsal view.

and metasoma with coarse longitudinal rugae dorsally, oblique and irregular laterally; (7) body black, with yellowish-brown mandibles, antennae, and legs.

**Distribution.** Yunnan.

### *Myrmecina planiclypea* Gu & Chen, sp. nov.

https://zoobank.org/5427366C-44B7-4855-BD06-C71A20A27F86

Fig. 45

**Material examined.** ***Holotype.*** • worker, Guilin, Guangxi, China, 25.0810°N, 110.2908°E, 145 m, secondary forest, leaf litter, 10.VI.2018, Zhilin Chen, GXNU180016 [GXNU]. ***Paratypes.*** • 4 workers and 1 queen, with the same collection data as the holotype [3 workers and 1 queen, GXNU; 1 worker, IZCAS].

**Diagnostic features.** (1) Head subquadrate, lateral margins nearly parallel and posterior margin arcuately concave; (2) mandibles with 7 distinct teeth, including 2 robust apical and subapical teeth, and a prominent basal denticle; (3) clypeus with a straight anterior margin, lacking a median denticle; (4) antennal scapes nearly reaching posterolateral corners; (5) eyes medium-sized, 10–12 ommatidia; (6) propodeal spines robust and acute, subequal in length to basal width, apices weakly curved outward; (7) anterolateral pronotal corners strongly convex, with prominent humeral corners; (8) mesosoma with longitudinal rugae and short oblique branches.

**Notes.** *M. planiclypea* Gu & Chen, sp. nov. is most closely resembles *M. guangxiensis* but can be readily distinguished by the following combination of characters: (1) the lateroventral portion of the head in *M. planiclypea* Gu & Chen, sp. nov. bears longitudinal rugae that become sparser posteriorly, whereas *M. guangxiensis* exhibits irregular striations on the sides and reticulate occipital corners; (2) anterior clypeal margin in *M. planiclypea* Gu & Chen, sp. nov. is straight, without a median denticle, contrasting with clypeal margin in *M. guangxiensis* is concave, with a median denticle; (3) the eyes of *M. planiclypea* Gu & Chen, sp. nov. are medium-sized (10–12 ommatidia), significantly larger than the very small eyes (4–5 ommatidia) of *M. guangxiensis*; (4) the propodeal

**Figure 45.** *Myrmecina planiclypea* Gu & Chen, sp. nov. **A.** Clypeus and mandible in full-face view; **B.** Head in full-face view; **C.** Body in dorsal view; **D.** Body in lateral view.

spines of *M. planiclypea* Gu & Chen, sp. nov. are robust, acute, and subequal in length to their basal width, with apices weakly curved outward, while those of *M. guangxiensis* are triangular, broad at the base, and straight without upward curvature; (5) the dorsal mesosoma of *M. planiclypea* Gu & Chen, sp. nov. bears longitudinal rugae, with short oblique branches, while *M. guangxiensis* exhibits two straight longitudinal striations medially and irregular striations laterally; (6) the petiole and postpetiole in *M. planiclypea* Gu & Chen, sp. nov. have longitudinal

rugae dorsally and laterally, whereas those in *M. guangxiensis* are shagreened or smooth and shining.

**Worker measurements.** (N = 5). HL 0.64–0.69, HW 0.62–0.67, CI 93–96, SL 0.64–0.67, SI 102–105, ED 0.08–0.10, MSL 0.72–0.76, PW 0.43–0.44, PL 0.19–0.22, PH 0.16–0.18, DPW 0.15–0.16, LPI 88–92, DPI 79–83, GL 0.91–0.98, TL 2.64–2.88.

**Worker description.** ***Head.*** In full-face view, head subquadrate, lateral margins nearly parallel and posterior margin arcuately concave; posterolateral corners rounded. Mandibles with 7 teeth: apical two teeth robust and acutely pointed, teeth 3–6 small but distinct; basal tooth larger than teeth 3–6, with a prominent denticle near inner margin. Clypeus with straight anterior margin, lacking a median denticle. Frontal lobes weakly laterally expanded. Antennae 12-segmented, scapes nearly reaching posterolateral corners. Eyes medium-sized, composed of 10–12 ommatidia. ***Mesosoma.*** In lateral view, dorsal outline evenly convex, eumetanotal spines small, weakly projecting above dorsal outline. Propodeal spines robust and acute, length subequal to their basal width. Propodeal spiracle large, diameter almost equal to its distance to propodeal declivity. In dorsal view, anterior pronotum strongly convex, with prominent humeral corners; lateral margins gradually converging posteriorly to propodeal spine bases. Propodeal spines directed posteriorly, their apices weakly curved outward. ***Metasoma.*** In lateral view, petiole slightly longer than its height, with triangular denticulate projection posterodorsally; ventral margin straight. Postpetiole with nearly straight dorsal margin and distinct anterodorsal corners; anteroventral corner weakly denticulate; gaster ovoid. In dorsal view, petiole rectangular with concave anterior margin and straight lateral margins; postpetiole broader than its length with shallowly concave anterior margin; gaster with distinct anterolateral corners. ***Sculpture.*** Mandibles and clypeus smooth and shining, except for one long and one short basal pit on frontal mandibular surface. Head with longitudinal rugae, bearing short branchings (not forming reticulations), except smooth and shining medial frons between frontal carinae. Lateroventral portion of head with longitudinal rugae, becoming sparser posteriorly. Mesosoma with longitudinal rugae bearing short oblique branches (not reticulate). Petiole and postpetiole laterally with longitudinal rugae, dorsally with finer and denser rugae. Gaster smooth and shining. ***Pilosity and pubescence.*** Body with moderately dense erect hairs. Pubescence limited to antennal club. ***Coloration.*** Anterior head margin, posterior and ventral margins of mesosoma, petiole, pospetiole, and base and posterior of gaster reddish-brown; remainder of body black. Mandibles, clypeus, and antennae reddish-brown, except antennal club and legs yellowish-brown.

**Etymology.** The specific epithet "*planiclypea*" is a Latin compound adjective derived from "*planus*" (flat, level) + "*clypeus*" (referring to the clypeus), meaning "flat-clypeus". This name highlights the diagnostic straight and non-protruding anterior clypeal margin that distinguishes this species from congeners with medially denticulate or concave clypeal structures.

**Distribution.** Guangxi.

### *Myrmecina raviwonghei* Jaitrong, Samung, Waengsothorn & Okido, 2019

Fig. 46

*Myrmecina raviwonghei* Jaitrong, Samung, Waengsothorn & Okido, 2019: 3, figs 1–5 (w.) THAILAND.

**Material examined.** Unexamined. High-resolution images of the holotype from Jaitrong et al. (2019) were reviewed.

**Diagnostic features.** (1) Clypeus with shallowly concave dorsal face and tridentate median projection on anterior margin; (2) antennal scapes short (SI 71–78), not reaching posterolateral corners of head; (3) eyes extremely reduced (4–6 ommatidia); (3) propodeal spines relatively long; (4) petiole rectangular in dorsal view (PTI 92–100), ventral margin straight, with small anterior denticle; (5) gastral tergite I strongly concave anteriorly and densely punctate, gastral sternite I reticulate; (6) dorsum of head and mesosoma densely punctate-rugose, ventrolateral portion of head with irregular rugae.

**Distribution.** Yunnan; THAILAND.

### *Myrmecina rugosodorsum* Gu & Chen, sp. nov.

https://zoobank.org/B5B6F116-DE54-43AE-A80B-C09D6A829A0E

Fig. 47

**Material examined.** ***Holotype.*** • worker, Jinyunshan, Chongqing, China, 29.8073°N, 106.3897°E, 550 m, secondary forest, leaf litter, 28.VII.2003, Jianhua Huang, GXNU030551 [GXNU].

**Diagnostic features.** (1) Posterolateral corners of head rounded and projecting; (2) clypeus with deeply arcuate anterior margin, bearing a tiny median denticle; (3) eumetanotal spines absent or vestigial; (4) petiole with triangular median dorsal projection and flat ventral margin; (5) postpetiole trapezoidal, lacking anterodorsal corner; (6) coarse irregular rugae on mesosomal dorsum (shared with *M. shanyii* Gu & Chen, sp. nov.), but latter lacks oblique frons rugae and punctate-rugulose lateroventral area of head.

**Notes.** Comparing to other *Myrmecina* species, *M. rugosodorsum* Gu & Chen, sp. nov. is most similar to *M. shanyii* Gu & Chen, sp. nov. in possessing a rugose mesosomal dorsum and robust propodeal spines, but *M. rugosodorsum* Gu & Chen, sp. nov. can be unequivocally distinguished by the following traits: (1) the clypeal anterior margin in *M. rugosodorsum* Gu & Chen, sp. nov. is deeply and arcuately concave, with a tiny median denticle (vs. the clypeal anterior margin in *M. shanyii* Gu & Chen, sp. nov. is nearly straight margin, lacking a denticle), though both share projecting anterolateral clypeal corners; (2) posterolateral corners of head of rounded and projecting in

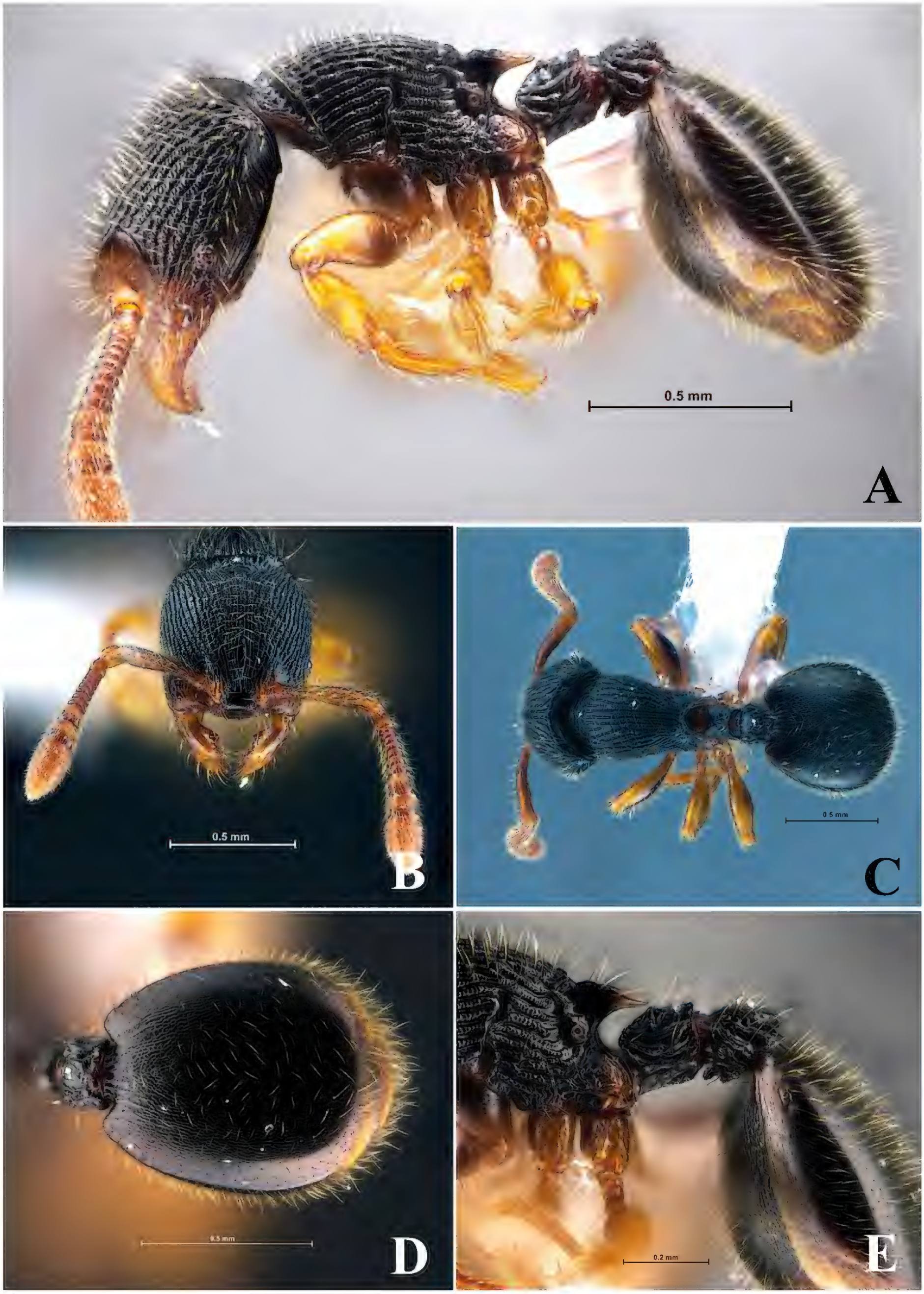


**Figure 46.** *Myrmecina raviwonghei*, holotype worker (THNHM-I-05470, Jaitrong et al. 2019). **A.** Body in lateral view; **B.** Head in full-face view; **C.** Body in dorsal view; **D.** Gaster in dorsal view; **E.** Petiole and postpetiole in lateral view.

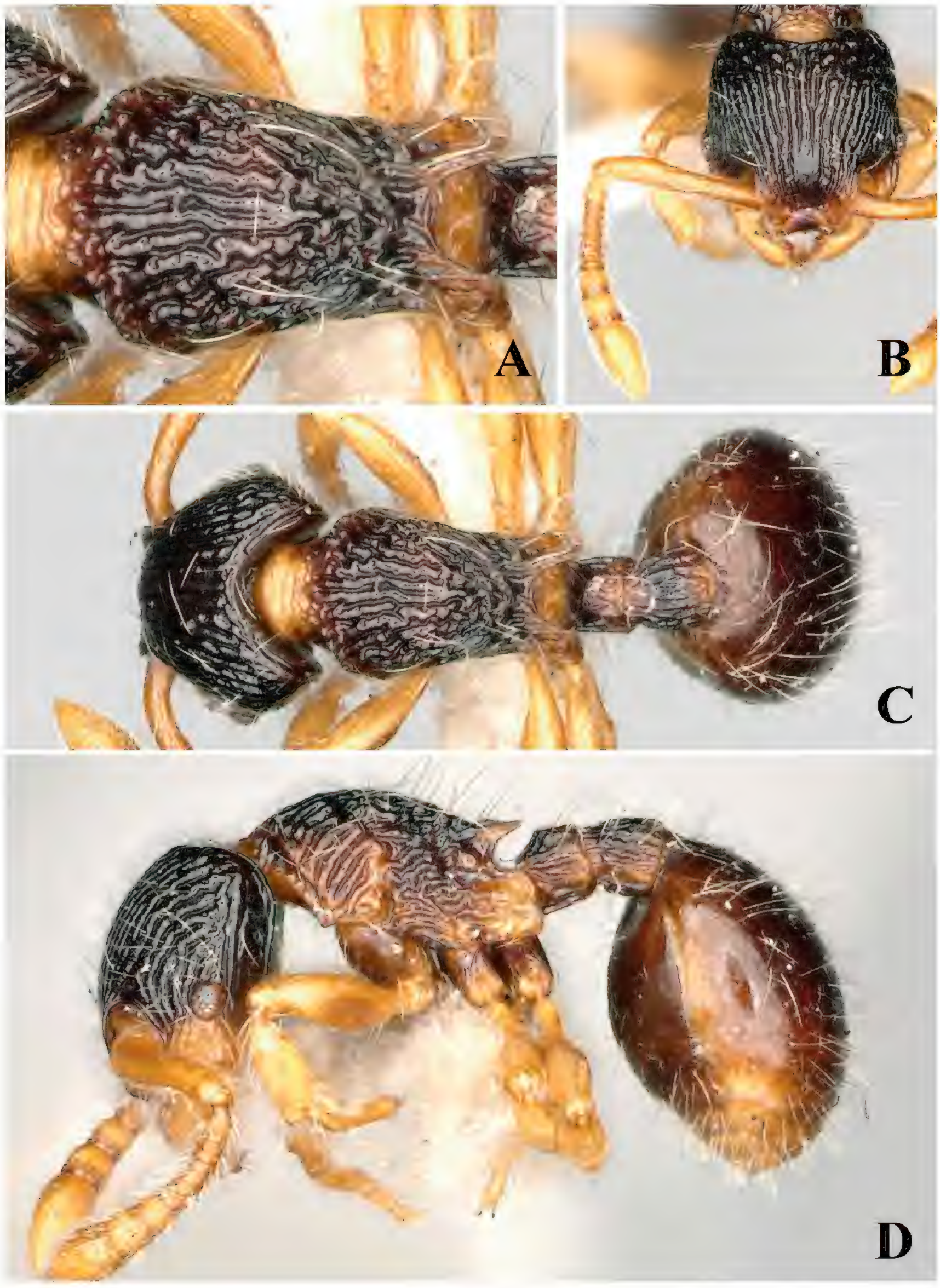


**Figure 47.** *Myrmecina rugosodorsum* Gu & Chen, sp. nov. **A.** Mesosoma in dorsal view; **B.** Head in full-face view; **C.** Body in dorsal view; **D.** Body in lateral view.

*M. rugosodorsum* Gu & Chen, sp. nov. (vs. broadly rounded but not projecting in *M. shanyii* Gu & Chen, sp. nov.); (3) eumetanotal spines of *M. rugosodorsum* Gu & Chen, sp. nov. absent or extremely reduced (vs. stout, tooth-like, and projecting above dorsal outline in *M. shanyii* Gu & Chen, sp. nov.); (4) interspinal space of propodeal spines of *M. rugosodorsum* Gu & Chen, sp. nov. U-shaped (vs. broadly V-shaped in *M. shanyii* Gu & Chen, sp. nov.); (5) petiole with a triangular median dorsal projection and flat ventral margin (vs. posterodorsally directed tooth-like projection and convex ventral margin with subpetiolar process in *M. shanyii* Gu & Chen, sp. nov.); (6) postpetiole

lacking an anterodorsal corner and not compressed anteroposteriorly (vs. strongly compressed with straight dorsal margin in *M. shanyii* Gu & Chen, sp. nov.); (7) while both species exhibit coarse irregular rugae on the mesosomal dorsum, *M. rugosodorsum* Gu & Chen, sp. nov. lacks the oblique posterolateral rugae on the frons and punctate-rugulose lateroventral head sculpture seen in *M. shanyii* Gu & Chen, sp. nov. *M. rugosodorsum* Gu & Chen, sp. nov. is also similar to *M. padangensis* from Indonesia, both of them possessing a rugose mesosomal dorsum. length of petiole nearly equal with its height in *M. rugosodorsum* Gu & Chen, sp. nov. (vs. the length of petiole approximately 1.5 times longer than its height in *M. padangensis*).

**Worker measurements.** (N = 1). HL 0.68, HW 0.63, CI 93, SL 0.57, SI 90, ED 0.09, MSL 0.81, PW 0.45, PL 0.17, PH 0.21, DPW 0.20, LPI 124, DPI 118, GL 0.87, TL 2.89.

**Worker description.** ***Head.*** In full-face view, head rectangular, lateral margins nearly parallel, posterior margin deeply concave medially, posterolateral corners rounded and projecting. Mandibles with 7 teeth on masticatory margin: apical two teeth broad and prominent, teeth 3–6 minute and indistinct, basal tooth larger than teeth 3–6, but distinctly smaller than apical teeth. Clypeus with projecting anterolateral corners, anterior margin of clypeus deeply and arcuately concave, bearing a tiny median denticle. Frontal lobes well-developed, laterally expanded. 12-segmented, scapes just reaching posterolateral corners. Eyes relatively large, composed of 16–18 ommatidia. ***Mesosoma.*** In lateral view, dorsal outline of mesosoma convex, eumetanotal spines absent or extremely reduced. Propodeal spines robust at base, acutely tapered apically, length slightly greater than their basal width. Propodeal spiracle moderate size, its diameter approximately 1/2 as its distance to propodeal declivity. In dorsal view, anterior margin of pronotum rounded and convex, anterolateral corners broadly rounded (not angular). Propodeal spines 1.5 times longer than their basal width; interspinal space U-shaped. ***Metasoma.*** In lateral view, petiole distinctly higher than long, dorsal margin with a triangular median projection; ventral margin flat. Postpetiole lacking a pronounced anterodorsal angle, not forming a distinct node; sternite trapezoidal. In dorsal view, petiole wider than long; postpetiole lacking anterolateral corners. Gaster oval. ***Sculpture.*** Mandibles and clypeus smooth and shining. Head in full-face view with coarse longitudinal rugae; lateroventral portion of head smooth and shining. Mesosomal dorsum with irregular rugae. Petiole and postpetiole with longitudinal striae; gaster smooth and shining. ***Pilosity and pubescence.*** Body densely covered with long erect hairs. Appressed pubescence restricted to antennal club. ***Coloration.*** Body dark brown to black; mandibles, antennae, and legs yellowish-brown.

**Etymology.** The specific epithet "*rugosodorsum*" is a Latin neuter compound adjective, combining "*rugosus*" (wrinkled or rugose) and "*dorsum*" (the back or dorsum). It refers to the distinctly rugose dorsal surface of the mesosoma, a key diagnostic trait of this species.

**Distribution.** Chongqing.

### *Myrmecina sauteri* Forel, 1912

Fig. 48

*Myrmecina sauteri* Forel, 1912: 54 (w.q.) CHINA.

**Material examined.** High-resolution images of the syntype (https://www.antweb.org, CASENT0908954, Will Ericson) were reviewed. ***Non-type.*** • 2 workers, Jiuwanshan, Guangxi, China, 25.2015°N, 108.6817°E, 1188 m, secondary forest, leaf litter, 26.VII.2022, Yuqing He, GXNU221993; • 4 workers, Huapincun, Guangxi, China, 25.5539°N, 109.9447°E, 1371 m, secondary forest, leaf litter, 01.VIII.2019, Defu Chen, GXNU191773; • 2 workers, Dayaoshan, Guangxi, China, 24.1697°N, 110.2436°E, 1173 m, secondary forest, leaf litter, 16.VII.2021, Defu Chen, GXNU212989.

**Diagnostic features.** (1) Antennae 12-segmented; (2) lateral portions of clypeus raised into a sharp ridge, connected to the front ridge of the antennal torulus; (3) scapes smooth, appearing shining; (4) postpetiole with anterior portion, nearly as wide as posterior in dorsal view; (5) mesosomal dorsum with dense striae or rugosity; (6) gastral tergite I sculptured.

**Distribution.** Guangxi, Jiangxi, Zhejiang, Taiwan.

### *Myrmecina shanyii* Gu & Chen, sp. nov.

https://zoobank.org/D8E77859-1F88-4F50-87E5-2C7C355F9B6A

Fig. 49

**Material examined.** ***Holotype.*** • worker, Jianfengling, Hainan, China, 18.7482°N, 108.8463°E, 895 m, secondary forest, leaf litter, 15.VII.2023, Xiaoyun Liang, GXNU230741 [GXNU]. ***Paratypes.*** • 6 workers, with the same collection data as the holotype; • 4 workers, Jianfengling, Hainan, China, 18.7423°N, 108.8491°E, 926 m, secondary forest, leaf litter, 19.VI.2024, Benan Zhang, GXNU240512 [8 workers, GXNU; 1 worker, IZCAS].

**Diagnostic features.** (1) Head rectangular (CI 101–104), lateral margins rounded and posterolateral corners convex; (2) mandibles with 6–7 teeth, including a basal denticle; (3) anterior margin of clypeus nearly straight, lacking median denticle but bearing distinct anterolateral projections; (4) eumetanotal spines projecting above mesosomal outline; (5) propodeal spines with length equal to their basal width and upturned apices; (6) distinctly compressed postpetiole (height > length) with straight dorsal margin; (7) oblique posterolateral rugae on frons combined with punctate-rugulose lateroventral head sculpture.

**Notes.** *M. shanyii* Gu & Chen, sp. nov. is closely resembles *M. shixui* Gu & Chen, sp. nov. in sharing rugose antennal scapes, *M. shanyii* Gu & Chen, sp. nov. differs markedly from *M. shixui* Gu & Chen, sp. nov. through the following diagnostic traits: (1) the head of *M. shanyii* Gu & Chen, sp. nov. is rectangular (CI 101–104), with convex lateral margins and rounded posterolateral corners (vs. the head of *M. shixui* Gu & Chen, sp. nov. is subrectangular (CI 95–97), with projecting posterolateral

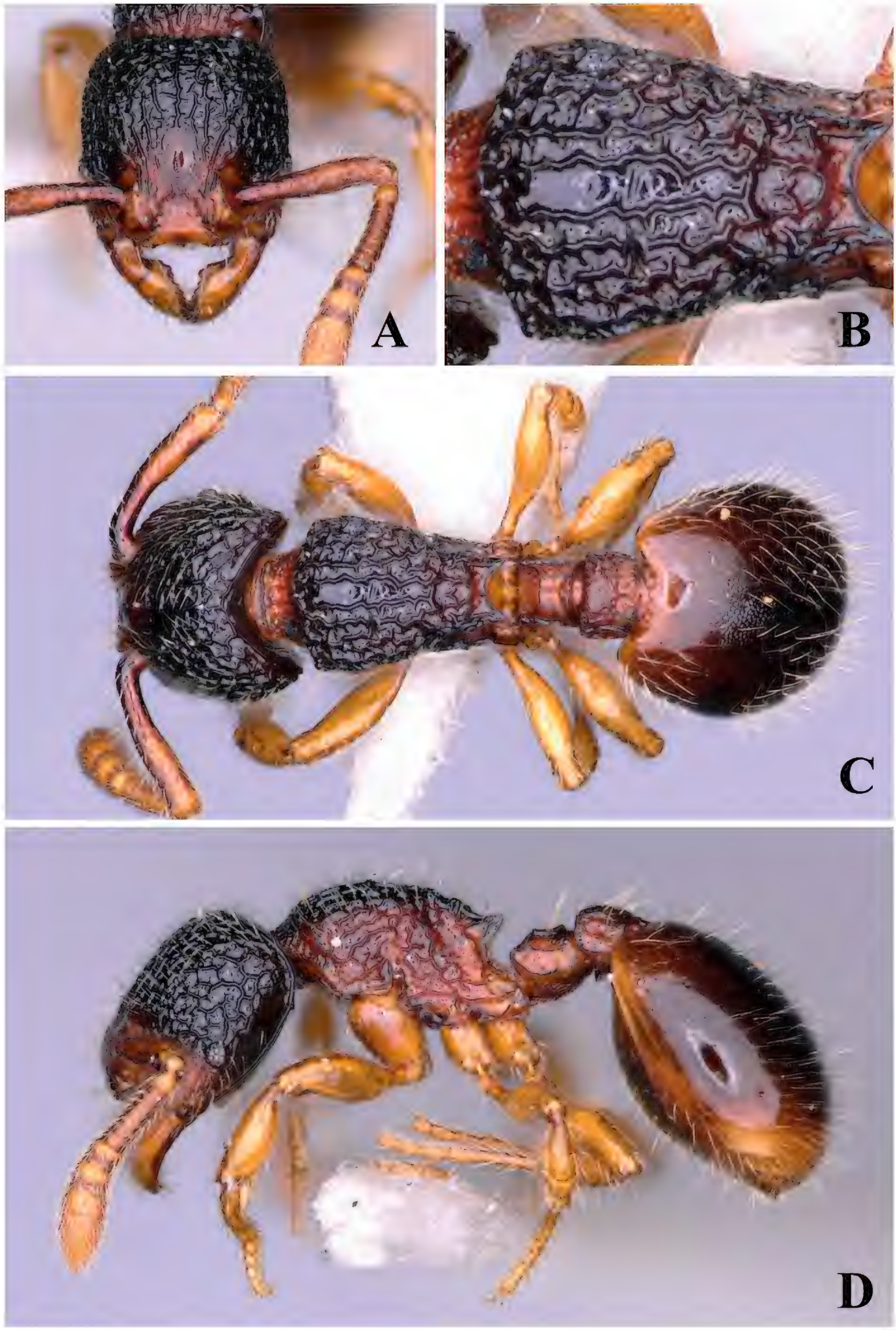


**Figure 48.** *Myrmecina sauteri*. **A.** Head in full-face view; **B.** Mesosoma in dorsal view; **C.** Body in dorsal view; **D.** Body in lateral view.

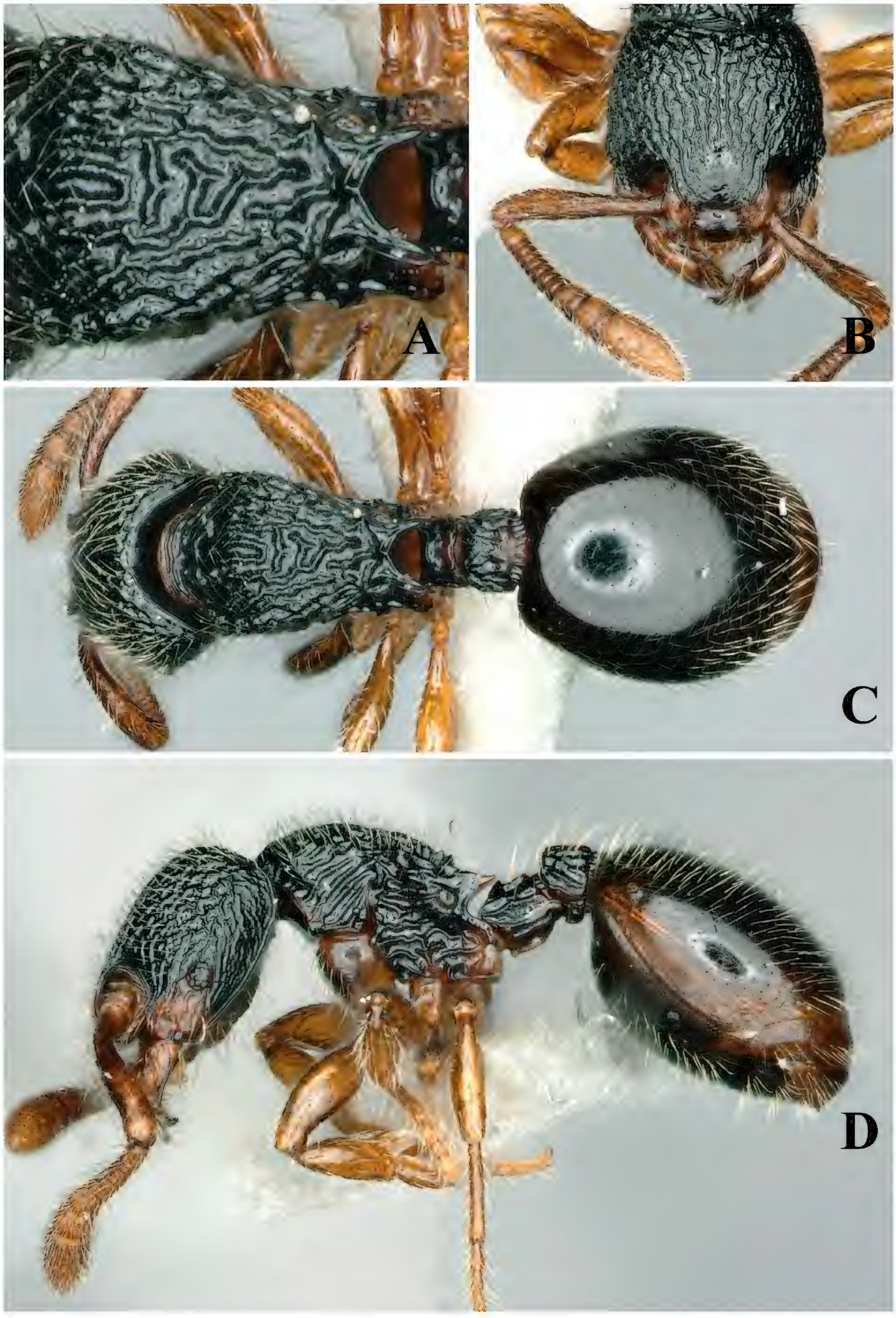


**Figure 49.** *Myrmecina shanyii* Gu & Chen, sp. nov. **A.** Mesosoma in dorsal view; **B.** Head in full-face view; **C.** Body in dorsal view; **D.** Body in lateral view.

corners); (2) the anterior margin of clypeus in *M. shanyii* Gu & Chen, sp. nov. nearly straight, lacking a median denticle (vs. arcuately concave with median denticle in *M. shixui* Gu & Chen, sp. nov.); (3) the eumetanotal spines of *M. shanyii* Gu & Chen, sp. nov. projects conspicuously above the dorsal outline (vs. *M. shixui* Gu & Chen, sp. nov. lacks such prominence); (4) propodeal spines differ in proportions—length equal to their basal width with upturned tips in *M. shanyii* Gu & Chen, sp. nov. (vs. length 2 times basal width and straight in *M. shixui* Gu & Chen, sp. nov.); (5) the postpetiole in *M. shanyii* Gu & Chen, sp. nov. exhibits strong anteroposterior compression (height > length) (vs. while height equal to length in *M. shixui* Gu & Chen, sp. nov.); (6) dorsum of head in *M. shanyii* Gu & Chen, sp. nov. exhibits rugulose-reticulated (vs. longitudinal striae in *M. shixui* Gu & Chen, sp. nov.); (7) punctate-rugulose lateroventral area of head (vs. faint striae with smooth interspaces in *M. shixui* Gu & Chen, sp. nov.); (8) mesosomal with anterior margin dorsum rugae in *M. shanyii* Gu & Chen, sp. nov. (vs. dense parallel longitudinal rugae in *M. shixui* Gu & Chen, sp. nov.).

**Worker measurements.** (N = 5). HL 0.51–0.56, HW 0.54–0.58, CI 100–104, SL 0.43–0.45, SI 77–78, ED 0.07–0.08, MSL 0.62–0.66, PW 0.39–0.42, PL 0.17–0.18, PH 0.18–0.20, DPW 0.18–0.21, LPI 106–111, DPI 106–116, GL 0.88–0.91, TL 2.61–2.67.

**Worker description.** ***Head.*** In full-face view, head rectangular (length > width), lateral margins slightly convex, posterior margin medially concave; posterolateral corners rounded and prominent. Mandibles with 6–7 teeth: apical two teeth robust; teeth 3–6 indistinct, basal tooth distinct but markedly smaller than apical teeth, with one denticle near inner margin. Clypeus projecting anteriorly beyond head margin, with distinct lateral teeth, anterior margin nearly straight, lacking median denticle. Frontal lobes weakly expanded laterally. Antennae 12-segmented, scapes just reaching posterolateral corners of head. Eyes medium size, composed of 14–16 ommatidia. ***Mesosoma.*** In lateral view, mesosoma convex, eumetanotal spines stout, tooth-like, projecting above dorsal outline. Propodeal spines robust at base, tapering apically, length equal to their basal width, with tips slightly upturned. Propodeal spiracle diameter equal to half its distance to propodeal declivity. In dorsal view, pronotum convex anteriorly with prominent humeral corners; lateral margins gradually converging posteriorly to propodeal spines. Propodeal spines 1.7 times longer than their basal width; inter-spinal space broadly V-shaped. ***Metasoma.*** In lateral view, petiole distinctly higher than long, with posterodorsally directed tooth-like projection in middle; ventral margin convex with distinct subpetiolar process. Postpetiole with anterodorsal corner, dorsal margin straight, strongly compressed anteroposteriorly (height much > length). In dorsal view, both petiole and postpetiole wider than long; gaster with nearly straight anterior margin and rounded anterolateral corners. ***Sculpture.*** Mandibles and clypeus smooth and shining. Antennal scapes with dense rugae on proximal half, distal half smoother. Dorsum of head rugulose-reticulated; lateroventral area of head punctate-rugulose. Pronotal sides with oblique posterodorsally directed striae; mesopleura and metapleura with longitudinal rugae; mesosomal dorsum with coarse irregular rugae. Petiole and postpetiole with short longitudinal rugae; gaster smooth and shining. ***Pilosity and pubescence.*** Body with moderately dense erect hairs. Pubescence restricted to antennal club. ***Coloration.*** Predominantly black; genae and mid-lateral portions of gaster with longitudinal reddish-brown bands. Antennae and legs reddish-brown to dark brown.

**Etymology.** The specific epithet is a genitive noun honoring Professor Shanyi Zhou, the renowned myrmecologist from Guangxi Normal University, for his significant contributions to Chinese ant taxonomy. The species name retains Professor Zhou's personal name "Shanyi" in its pinyin romanization with Latin genitive suffix *-i*.

**Distribution.** Hainan.

### *Myrmecina shixui* Gu & Chen, sp. nov.

https://zoobank.org/89CF14B6-5C3F-4619-B169-E5B2A0E92FEA

Fig. 50

**Material examined.** ***Holotype.*** • worker, Chenggong Area, Yunnan, China, 24.8701°N, 102.7205°E, 1900 m, secondary forest, leaf litter, 17.VI.2024, Shixu Sun, GXNU249762 [GXNU]. ***Paratype.*** • 3 workers, with the same collection data as the holotype [2 workers, GXNU; 1 worker, IZCAS].

**Diagnostic features.** (1) Densely rugose antennal scapes; (2) head subrectangular (CI 92–98), posterior margin deeply concave; (3) clypeal margin arcuately concave, bearing a median denticle; (4) propodeal spines slender, 2 times longer than their basal width, with broadly V-shaped inter-spinal space; (5) lateroventral area of head with faint striae and smooth interspaces; dense mesosomal longitudinal rugae.

**Notes.** *M. shixui* Gu & Chen, sp. nov. is unambiguously distinguished from all other Chinese *Myrmecina* species by the characters of densely rugose antennal scapes (a trait shared only with *M. shanyii* Gu & Chen, sp. nov. and *M. hamula* among regional congeners). The species is most similar to *M. shanyii* Gu & Chen, sp. nov. but differs markedly in multiple diagnostic traits: (1) the head of *M. shixui* Gu & Chen, sp. nov. is subrectangular (CI 95–97), with projecting posterolateral corners, clypeal margin arcuately concave, bearing a median denticle, (vs. the head of *M. shanyii* Gu & Chen, sp. nov. is rectangular (CI 101–104), with rounded corners, clypeal margin straight, denticle-free; (2) while both species share robust propodeal spines, *M. shixui* Gu & Chen, sp. nov. exhibits spines 2 times longer than their basal width (vs. length equal to basal width in *M. shanyii* Gu & Chen, sp. nov.); (3) though both species exhibit rugose antennal scapes, *M. shixui* Gu & Chen, sp. nov. shows coarse longitudinal frontal rugae (vs. oblique in *M. shanyii* Gu & Chen, sp. nov.); lateroventral head with faint striae and smooth interspaces in *M. shixui* Gu & Chen, sp. nov. (vs. punctate-rugulose in *M. shanyii* Gu & Chen, sp. nov.); mesosoma with dense parallel rugae (vs. irregular in *M. shanyii* Gu & Chen, sp. nov.).

**Figure 50.** *Myrmecina shixui* Gu & Chen, sp. nov. **A.** Petiole in lateral view; **B.** Head in full-face view; **C.** Body in dorsal view; **D.** Body in lateral view.

**Worker measurements.** (N = 3). HL 0.62–0.64, HW 0.59–0.62, CI 92–97, SL 0.47–0.48, SI 77–80, ED 0.07–0.08, MSL 0.76–0.80, PW 0.42–0.45, PL 0.17–0.19, PH 0.19–0.20, DPW 0.19–0.20, LPI 104–112, DPI 105–112, GL 0.91–0.98, TL 2.88–2.94.

**Worker description.** ***Head.*** In full-face view, head subrectangular, slightly narrower anteriorly; posterior margin deeply concave medially. Mandibles with 8 teeth: apical two teeth largest, teeth 3–7 minutes, basal tooth larger than teeth 3–7 but distinctly smaller than apical teeth. Clypeus with prominent anterolateral projections and anterior margin arcuately concave, bearing a small median denticle. Frontal lobes strongly expanded laterally. Antennae 12-segmented, scapes just reaching posterolateral corners. Eyes relatively large, composed of 18–20 ommatidia. ***Mesosoma.*** In lateral view, dorsal outline evenly convex, eumetanotal spines visible but not projecting above dorsal silhouette. Propodeal spines robust, basal width > length. Propodeal spiracle small, diameter about half of its distance to propodeal declivity. In dorsal view, pronotum weakly convex, with prominent humeral corners anteriorly; lateral margins gradually converging posteriorly to propodeal spine bases. Propodeal spines slender, length twice as their basal width; inter-spinal space broadly V-shaped. ***Metasoma.*** In lateral view, petiole slightly higher than long, with triangular dorsal projection; subpetiolar process bluntly angular. Postpetiole lacking a distinct node, dorsal margin nearly straight, ventral margin concave medially with a distinct anteroventral tooth. Gaster ovoid. In dorsal view, petiole and postpetiole wider than long; postpetiole without distinct anterolateral corners. ***Sculpture.*** Mandibles smooth and shining, except for two basal longitudinal grooves. Clypeus smooth and shining. Head with coarse longitudinal rugae, bearing dense fine puncta; lateroventral portion of head with faint, sparse striae, appearing mostly smooth and shining. Antennae with dense longitudinal rugae. Mesosoma with dense longitudinal rugae. Petiole and postpetiole with short longitudinal rugae; gaster smooth and shining. ***Pilosity and pubescence.*** Body with moderately dense erect hairs. Pubescence restricted to antennal club. ***Coloration.*** Body black; mandibles, antennae, and legs dark brown, antennal club slightly lighter.

**Etymology.** The specific epithet "*shixui*" is a Latinized genitive noun derived from the given name "Shixu" of the collector Mr. Shixu Sun. The name is formed by adding the patronymic suffix *-i* to the stem "Shixu" and honors Mr. Sun's contributions in collecting the type specimens of *M. shixui* Gu & Chen, sp. nov.

**Distribution.** Yunnan.

### *Myrmecina sinensis* Wheeler, 1921

Fig. 51

*Myrmecina graminicola* subsp. *sinensis* Wheeler, W.M. 1921: 539 (w.) CHINA. Raised to species: Zhou et al. 2008: 290.

**Material examined.** ***Non-type.*** • 2 workers, Jiuwanshan, Guangxi, China, 25.0553°N, 108.7483°E, 622 m, secondary forest, leaf litter, 30.VII.2022, Zhilin Chen, GXNU222289; • 2 workers, Dayaoshan, Guangxi, China, 24.1356°N, 110.0861°E, 640 m, secondary forest, leaf litter, 26.VI.2021, Xiaoyun Liang, GXNU211658; • 3 workers, Daguishan, Guangxi, China, 24.0997°N, 111.8044°E, 127 m, secondary forest, leaf litter, 01.VIII.2021, Defu Chen, GXNU210145.

**Diagnostic features.** (1) Head with concave posterior margin, rounded occipital corners, and convex sides; (2) anterior margin of clypeus nearly straight, lacking median denticle; (3) mandibles subtriangular, with 2 distinct apical teeth followed by indistinct denticles; (4) antennae 12-segmented, scapes reaching occipital corners; (5) mesosoma arched in profile with angular pronotal corners and slightly upturned; propodeal spines stout (broad-based, triangular); (6) petiole rectangular, dorsum bluntly angular; (7) postpetiole dorsum flat with angular anteroventral corner; (8) gaster smooth and shining; (9) mandibles and clypeus smooth and shining; frons and vertex with radiating longitudinal rugae; head sides with curved striae and dense puncta; (10) mesosomal dorsum with sinuous longitudinal rugae, sides rugose; (11) petiole and postpetiole weakly rugulose-punctate.

**Distribution.** Guangxi, Yunan, Zhejiang, Liaoning.

### *Myrmecina striata* Emery, 1889

*Myrmecina striata* Emery, 1889: 500 (w.) MYANMAR.

**Material examined.** Unexamined.

**Diagnostic features.** (1) Body predominantly black; mandibles, antennae, legs, and posterior abdominal segments reddish; (2) head and mesosoma regularly and deeply grooved, with shining intergroove ridges nearly smooth (lacking transverse rugae); (3) clypeus not bilobed, with paired faint carinae and no median denticle (vs. median denticle present in some congeners); (4) mesonotum lacks teeth or spinules; instead bears a minute tubercle on each side (vs. acute spinules in *M. latreillei*); (5) metanotal spines, morphology identical to *M. latreillei* (retained plesiomorphic condition); (6) petiolar nodes finely grooved, abdomen glossy and smooth (vs. rugose or punctate in related species); (7) small body length (TL 3.5), typical for the genus; (8) resembles *M. sulcata* in clypeal structure but differs in smoother intergroove ridges and reduced mesonotal armature (tubercles vs. spines).

**Distribution.** Jiangsu (dubious), Sichuan (dubious), Yunnan (dubious); INDIA, MYANMAR, SRI LANKA.

**Notes.** To date, we have been unable to examine the type specimens or high-resolution images of the type material of *M. striata*. Therefore, the diagnostic features summarized above are based solely on the original description by Emery (1895). Regarding the reported distribution of this species in China, the records remain doubtful or questionable. A further practical reason for provisional retention is the sheer number of published records that already cite *M. striata* from China. According to AntWiki.org, the species has been reported from: Guangxi 3 records (Li 2006;

**Figure 51.** *Myrmecina sinensis*. **A.** Head in full-face view; **B.** Mesosoma in lateral view; **C.** Body in dorsal view; **D.** Body in lateral view.

Huang and Zhou 2007; Guénard and Dunn 2012); Jiangsu 4 records (Li et al. 2011; Guénard and Dunn 2012); Yunnan 27 records (Xu 1998; Xu et al. 1999; Xu et al. 2001; Li et al. 2009; Chen et al. 2011; Guénard and Dunn 2012; Lu et al. 2016; Fontanilla et al. 2019; Huang et al. 2019); Sichuan 2 records (Luo et al. 2019a, 2019b; He et al. 2020). These citations involve at least 15 different institutions. The combination of diagnostic traits does not match any confirmed specimens from known regional congeners. Whether *M. striata* truly occurs in China requires further verification by direct examination of type specimens (or high-resolution photographs of type) and critical comparison with Chinese specimens currently identified as this species. At present we have no practical means of verifying every locality or re-examining every voucher. Deleting the species from the Chinese fauna would therefore imply that all of these records are definitively erroneous—a conclusion we cannot yet be justified. Flagging the taxon as "dubious" preserves the existing information while clearly signaling to future workers that confirmation is required. Current Chinese records should be treated with caution until comparative studies confirm their validity.

### *Myrmecina strigis* Lin & Wu, 1998

Fig. 52

*Myrmecina strigis* Lin & Wu, 1998: 91, figs 9, 11, 21–24 (w.) TAIWAN.

**Material examined.** Unexamined.

**Diagnostic features.** (1) 12-segmented antennae; (2) head and mesosoma with striate-rugose sculpture (frons smooth); (3) anterior margin of clypeus convex (lacking a median denticle); (4) propodeal spines short, acute (shorter than their basal width, directed posteriorly); (5) gastral tergite I smooth; and (6) body size large (TL > 3.5 mm).

**Notes.** To date, we have been unable to examine the type specimens or obtain high-resolution images of the type material of *M. strigis*, except for SEM photographs of its holotype. This species closely resembles *M. asiatica* in general morphology, but can be reliably distinguished by the following diagnostic characters: (1) significantly larger body size (TL > 3.5) (vs. < 2.6 in *M. asiatica*), (2) anterior clypeal margin convex (vs. straight in *M. asiatica*), and (3) propodeal spines proportionally shorter. Additional distinguishing features include its propodeal spine orientation (compared to *M. taiwana*) and gastral tergite I completely smooth (vs. the reticulate sculpture in *M. raviwonghei*).

**Distribution.** Taiwan.

### *Myrmecina subuncinata* Gu & Chen, sp. nov.

https://zoobank.org/7739AF90-5B57-49AB-B080-DB939EF974B7

Fig. 53

**Material examined.** ***Holotype.*** • worker, Wuzhishan, Hainan, China, 18.6698°N, 109.4525°E, 737 m, secondary forest, soil, 11.VII.2024, Xiaoyun Liang, GXNU242026 [GXNU]. ***Paratypes.*** • 3 workers, with the same collection data as the holotype; • 5 workers and 1 queens, Jianfengling, Hainan, China, 18.7113°N, 108.8766°E, 995 m, secondary forest, soil, 20.VI.2024, Xiaoyun Liang, GXNU240678; • 1 worker, Jianfenglin, Hainan, China, 18.7491°N, 108.9162°E, 672 m, secondary forest, dead wood, 22.VI.2024, Xiaoyun Liang, GXNU240835; • 2 workers, Jianfengling, Hainan, China, 18.7508°N, 108.8666°E, 811 m, secondary forest, soil, 08.VIII.2023, Yanping Wu, GXNU231415 [11 workers, GXNU; 1 worker, IZCAS].

**Diagnostic features.** (1) Anterior margin of clypeus concave, bearing a distinct transverse rectangular projection medially (non-dentiform); (2) antennal scapes smooth and shining, with sparse piliferous puncta; (3) lateroventral area of head entirely smooth and shining; (4) ventral margin of petiole convex in lateral view; (5) propodeal spines long (approximately 1.5 times basal width), abruptly tapered, and sharply upturned apically into semicircular hooks; (6) gastral tergite I with only faint striae or weak reticulation, remainder smooth and shining.

**Notes.** *M. subuncinata* Gu & Chen, sp. nov. is most similar to *M. raviwonghei* but differs consistently in: (1) anterior margin of the clypeus is medially concave and bears a distinct transverse rectangular projection (non-dentiform) in *M. subuncinata* Gu & Chen, sp. nov. (vs. clypeal margin straight or weakly concave, with a median dentiform in *M. raviwonghei*. (2) antennal scapes smooth except for sparse piliferous puncta in *M. subuncinata* Gu & Chen, sp. nov. (vs. antennal scapes distinctly punctate in *M. raviwonghei*); (3) lateroventral area of head smooth and shining in *M. subuncinata* Gu & Chen, sp. nov.; (vs. ventrolateral portion of head with rugae in *M. raviwonghei*); (4) petiole of *M. subuncinata* Gu & Chen, sp. nov. with a ventral margin convex, postpetiole with rounded anterodorsal corner; sternite of postpetiole trapezoidal with straight ventral margin and dentiform postpetiolar process (vs. ventral margin of petiole is straight ventrally, ventral margin of postpetiole stronger concave with a stronger postpetiolar process in *M. raviwonghei*); (5) *M. subuncinata* Gu & Chen, sp. nov. exhibits very faint striae or weak reticulation on the gastral tergite I, while the rest is smooth and shining in *M. subuncinata* Gu & Chen, sp. nov. (vs. gastral tergite I with finely punctate and gastral sternite I with reticulate in *M. raviwonghei*).

**Worker measurements.** (N = 3). HL 0.70–0.74, HW 0.80–0.83, CI 112–116, SL 0.53–0.54, SI 65–66, ED 0.08–0.09, MSL 0.81–0.85, PW 0.54–0.57, PL 0.24–0.26, PH 0.25–0.27, DPW 0.24–0.25, LPI 104–113, DPI 96–100, GL 1.21–1.25, TL 3.45–3.51.

**Worker description.** ***Head.*** In full-face view, head trapezoidal, broader posteriorly; lateral margins convex, posterior margin medially concave with rounded posterolateral corners. Mandibles with 7 teeth: apical two teeth robust, teeth 3–6 small, low and blunt; basal tooth smaller than apical teeth. Clypeus with prominent anterolateral corners, anterior margin concave, bearing a transverse

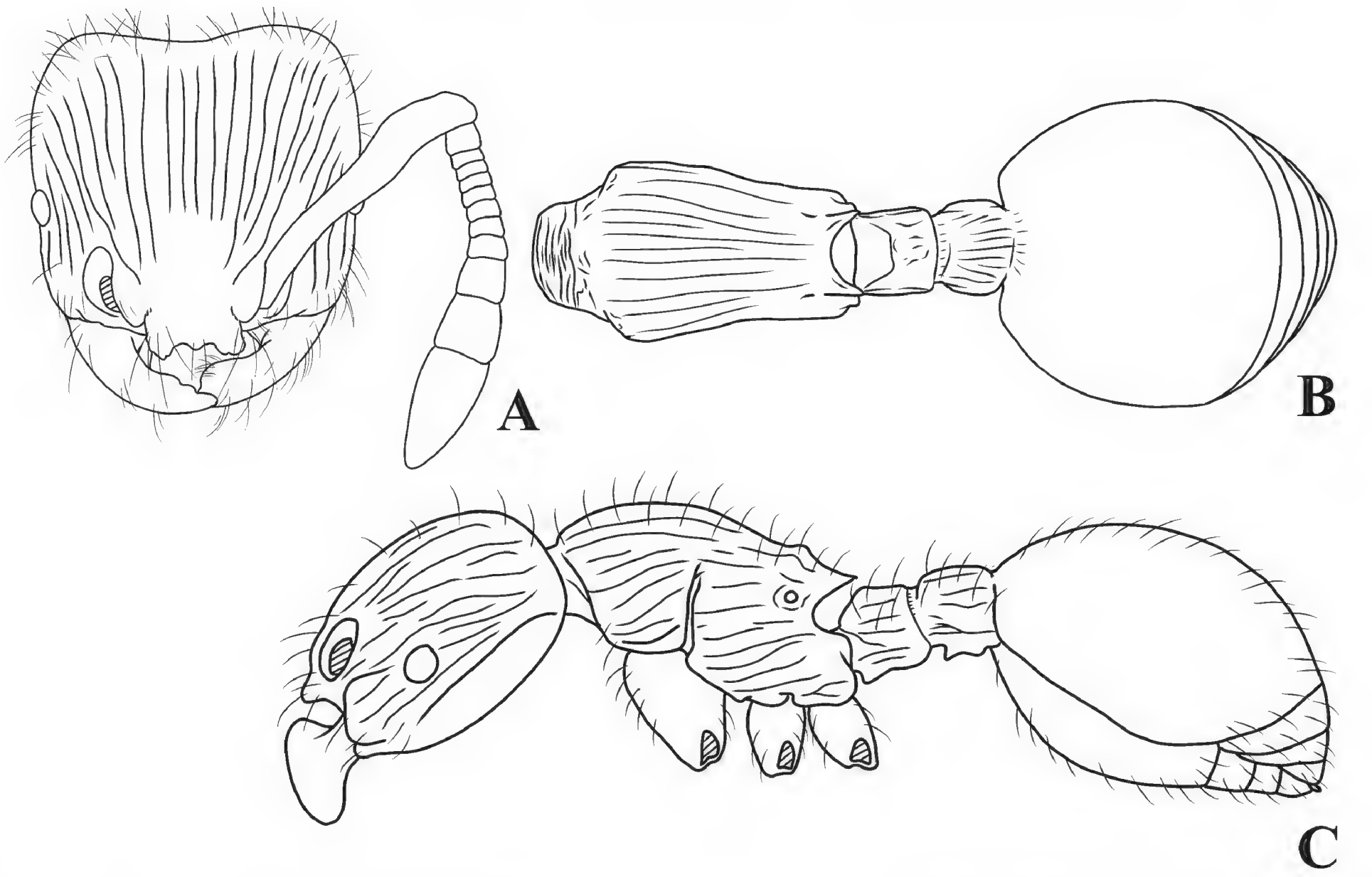


**Figure 52.** Line drawing of *Myrmecina strigis* (redrawn after the SEM photographs of Lin and Wu 1998). **A.** Head in full-face view; **B.** Body in dorsal view; **C.** Body in lateral view.

rectangular projection medially (non-dentiform). Frontal lobes strongly laterally expanded. Antennae 12-segmented, scapes not reaching posterolateral corners. Eyes medium-sized, composed of 14–16 ommatidia. ***Mesosoma.*** In lateral view, dorsal outline weakly convex, eumetanotal spines slightly projecting above dorsal outline. Propodeal spines relatively long (1.5 times basal width), abruptly tapered apically, tips sharply upturned, forming semicircular hooks. Propodeal spiracle diameter half its distance to propodeal declivity. In dorsal view, pronotum evenly convex with prominent humeral corners; propodeal spines approximately > 2.0 times basal length, apices outwardly curved. ***Metasoma.*** In lateral view, petiole higher than long, dorsally with triangular projection posteromedially; subpetiolar process prominent, ventral margin convex. Postpetiole with rounded anterodorsal corner; sternite of postpetiole trapezoidal with straight ventral margin and dentiform postpetiolar process. Gaster ovoid. In dorsal view, petiole slightly narrower anteriorly, broader than long; postpetiole rectangular with rounded anterolateral corners; gaster anterior margin concave with distinct anterolateral corners. ***Sculpture.*** Mandibles smooth and shining except for two longitudinal basal pits; clypeus smooth. Antennal scapes smooth, except for piliferous puncta. Head densely longitudinally rugoreticulate, with punctate interrugal spaces; lateroventral areas smooth. Pronotal sides with posteriorly oblique rugae (not continuous with mesopleural and propodeal rugae). Propodeum with coarse longitudinal rugae extending to transverse inter-spinal carina; single short median carina posterior to spines. Petiole and postpetiole with short longitudinal rugae. Gastral tergite I with faint basolateral striae-reticulation, otherwise smooth. ***Pilosity.*** Body densely covered with long erect hairs; pubescence restricted to antennal club. ***Coloration.*** Mandibles, frontal lobes, antennae, and legs yellowish-brown to reddish-brown. Head, mesosoma, petiole, and postpetiole black. Gaster black with narrow midlateral area yellow-brown bands and segmental posterior margins.

**Etymology.** The specific epithet "*subuncinata*" is derived from the Latin prefix "*sub-* " (meaning "somewhat" or "slightly") combined with "*uncinatus*" ("hooked"), referring to the weakly upturned propodeal spines that distinguish this species. The name reflects the characteristic subtly curved propodeal spines, which is intermediate between the strongly hooked spines of some congeners (e.g., *M. hamula*) and the weakly hooked spines of some congeners (e.g., *M. eruga* from Australasia).

**Distribution.** Hainan.

### *Myrmecina taiwana* Terayama, 1985

Fig. 54

*Myrmecina taiwana* Terayama, 1985: 38, figs 6–10 (w.q.) TAIWAN.

**Material examined.** High-resolution images of the paratype ((https://www.antweb.org, CASENT0901731, Will

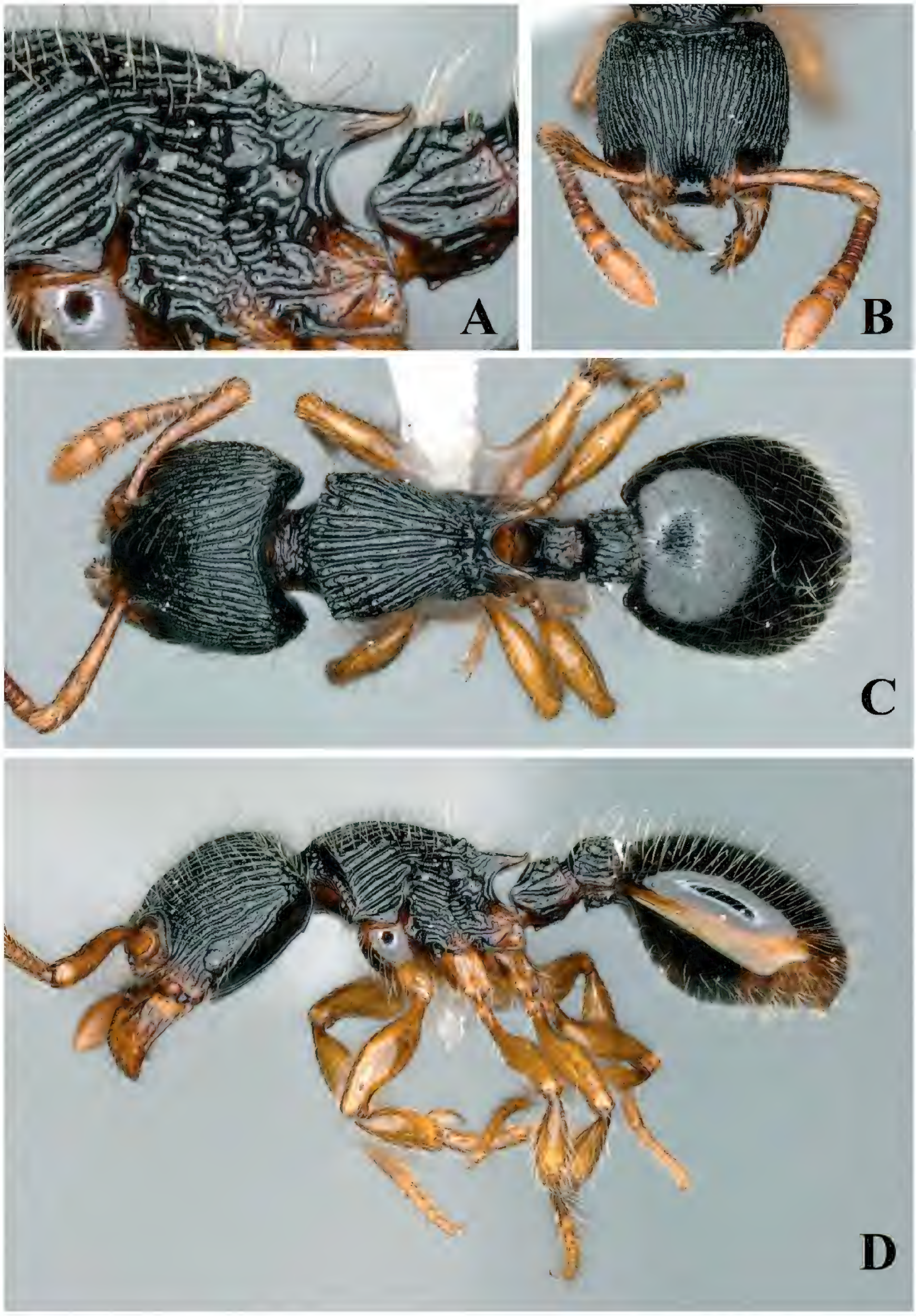


**Figure 53.** *Myrmecina subuncinata* Gu & Chen, sp. nov. **A.** Propodeal spines in lateral view; **B.** Head in full-face view; **C.** Body in dorsal view; **D.** Body in lateral view.

Ericson) were reviewed. ***Non-type.*** • 1 worker, Jiuwanshan, Guangxi, China, 25.0580°N, 108.7435°E, secondary forest, leaf litter, 550 m, 30.VIII.2001, Shanyi Zhou, GXNU0014321; • 1 worker, Jingshi, Guangxi, China, 25.7452°N, 110.2936°E, 320 m, secondary forest, leaf litter, 09.VII.1999, Shanyi Zhou, GXNU003721.

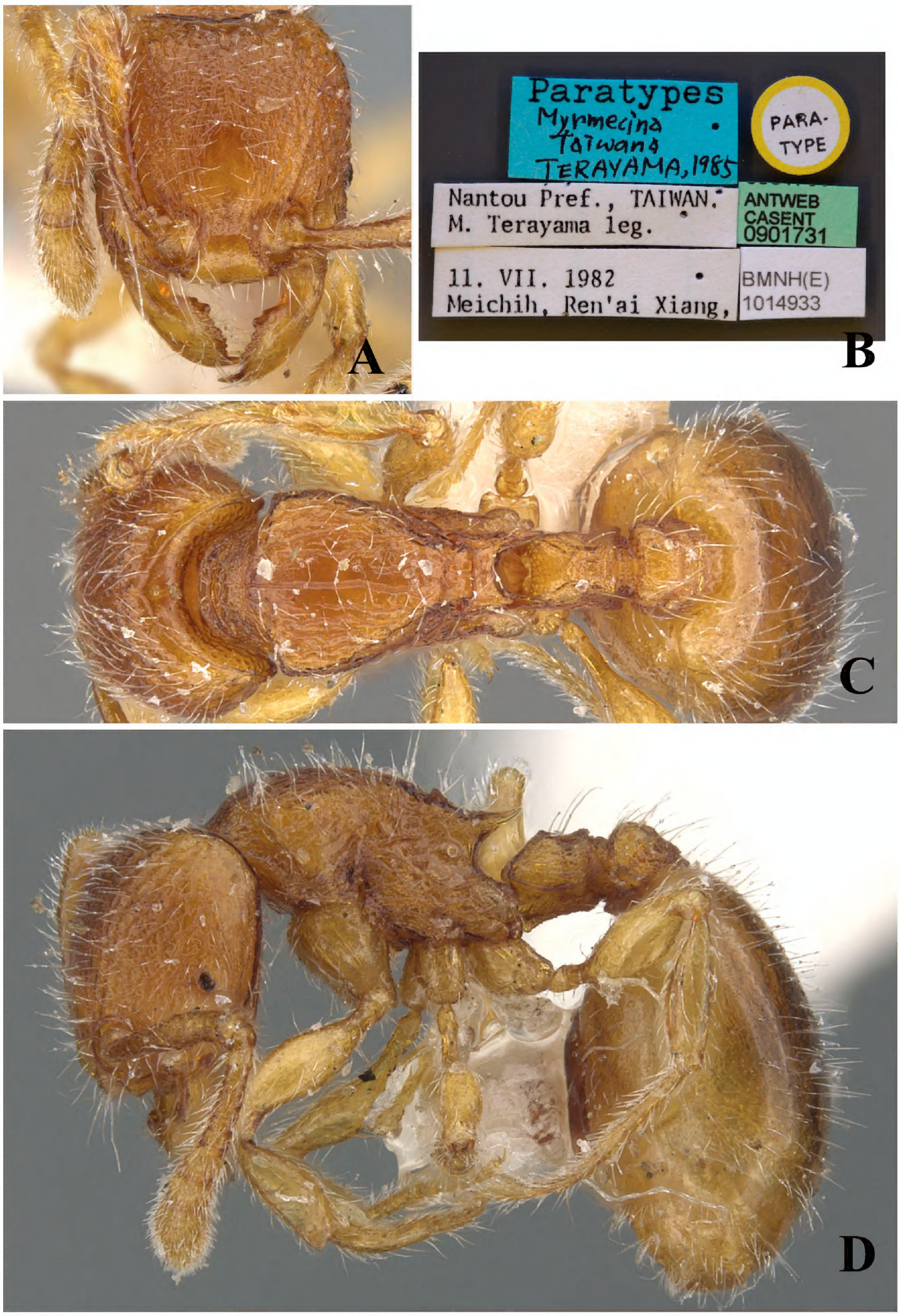


**Figure 54.** *Myrmecina taiwana*, paratype worker (https://www.antweb.org, CASENT0901731, photographed by Will Ericson). **A.** Head in full-face view; **B.** Label of paratype; **C.** Body in dorsal view; **D.** Body in lateral view.

**Diagnostic features.** (1) Antennae 12-segmented; (2) median portion of occipital margin straight, without a median denticle; (3) lateral portions of clypeus raised into a sharp ridge, connected to the front ridge of the antennal torulus; (4) postpetiole with anterior portion nearly as wide as posterior in dorsal view; (5) mesosomal dorsum with irregular longitudinal rugae; (6) gastral tergite I smooth and shining; (7) propodeal

spines elongate, length > 1.5 times basal width, apex slightly upturned in lateral view.

**Distribution.** Guangxi, Yunnan, Taiwan.

# Discussion

The present study significantly expands our understanding of *Myrmecina* diversity in China, documenting 28 species (including 11 new species) and providing the first comprehensive taxonomic review of the genus. Our findings highlight persistent taxonomic challenges that require further investigation. Below, we discuss the implications of our results in the context of broader myrmecological research: (1) the genus *Myrmecina* exhibits remarkable morphological variation in China, particularly in clypeal structure (e.g., presence or absence of median denticles, lateral ridges), propodeal spine morphology (e.g., hooked in *M. hamula*, upturned in *M. subuncinata* Gu & Chen, sp. nov.), sculpturing patterns (e.g., reticulate in *M. jiachengi* Gu & Chen, sp. nov., rugose in *M. rugosodorsum* Gu & Chen, sp. nov., smooth in *M. laevidorsa* Gu & Chen, sp. nov.), antennal segmentation (e.g., *M. pauca* is the only Chinese species with 11-segmented antennae, a rare trait in the genus); (2) our study confirms that China serves as a biodiversity hotspot for *Myrmecina*, with 28 species recorded to date, more than any other country in the region (by comparison, Vietnam currently records 6 species, Thailand 4, Malaysia 5, and Indonesia 5). The high diversity in southern China (especially Yunnan, Guangxi, and Hainan) likely reflects the region's complex topography, climatic heterogeneity, and position at the interface of the Palearctic and Oriental biogeographic realms; (3) records of *M. striata* in China are dubious. The original description by Emery (1889) lacks diagnostic clarity, and no verified specimens match the type material from Myanmar. Chinese records may represent misidentified or undescribed taxa; (4) current delimitations of *Myrmecina* species rest almost exclusively on morphology, a practice that easily confuses intraspecific variation with interspecific differences. Robust species boundaries can only be established through integrative datasets: UCE phylogenomics has already resolved the deep relationships of the ectaheteromorph ants (Camacho et al. 2022), and a comparable genomic reassessment of the amphitropical New World genus Dorymyrmex has re-defined its species limits (Oberski 2022). A similar combination of phylogenomics and cuticular-hydrocarbon profiling is now required to test the validity of the morphology-based species within Chinese *Myrmecina*; (5) several newly described species (*M. hirsuta* Gu & Chen, sp. nov., *M. globicephala* Gu & Chen, sp. nov., *M. shanyii* Gu & Chen, sp. nov.) are known from single localities, rendering them vulnerable to habitat loss. Given the role of *Myrmecina* in soil ecosystems (e.g., predation on oribatid mites), their decline could disrupt nutrient cycling. We recommend targeted surveys in understudied regions (e.g., Sichuan, Fujian) and genetic barcoding of type specimens to clarify taxonomic uncertainties. This study establishes a comprehensive taxonomic framework for *Myrmecina* in China, but much work remains. Future research should prioritize integrative taxonomy and biogeographic modeling to unravel the evolutionary history of this enigmatic genus.

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